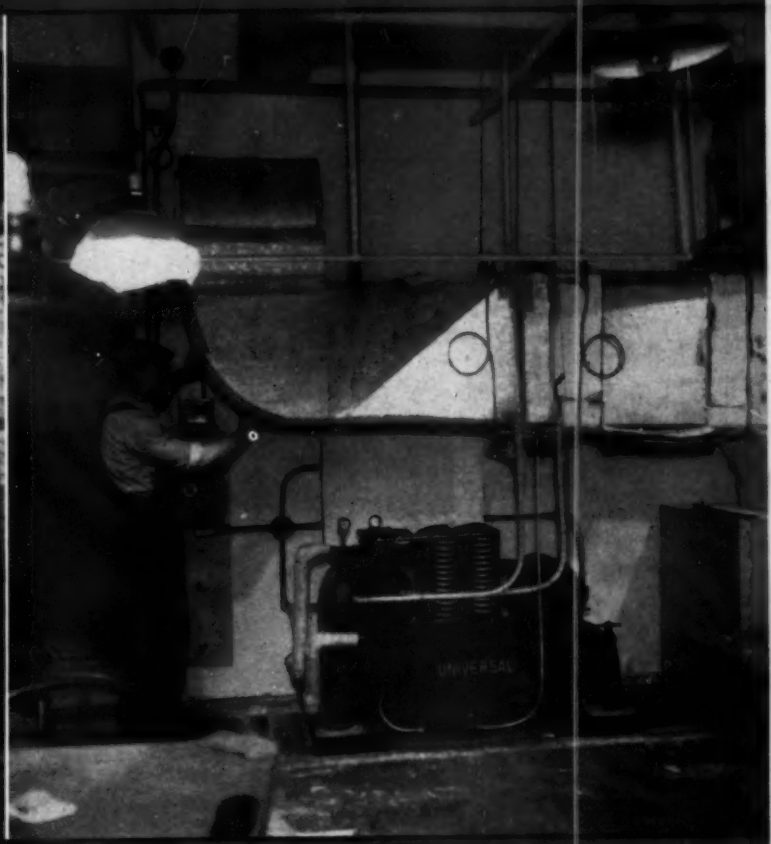
AMERICAN ARTISAN

RESIDENTIAL AIR CONDITIONING
WARM AIR HEATING--SHEET METAL CONTRACTING



JULY, 1946

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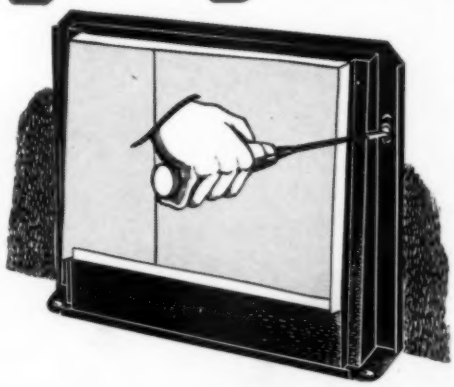
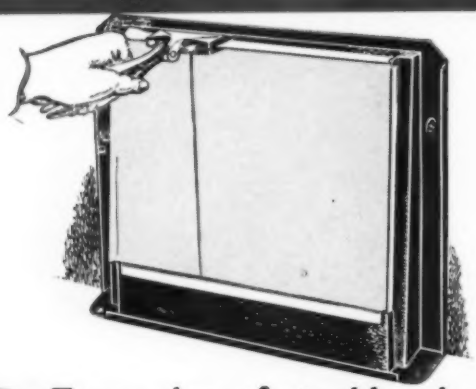
Correct Practice in Oil Heating - - - - - - - - - - - - - - - Page 66

ONLY 4 QUICK EASY OPERATIONS TO INSTALL THE NEW AIR CONTROL Streak Proof Gravity Register

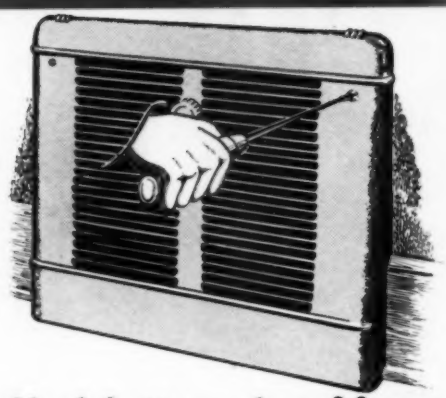
1 Place AIR SEAL INNER FRAME over the stackhead. This positions the stackhead.



2 Screw the frame securely to the wall. Nail base to floor (optional).



3 Turn edge of stackhead over the edge of the frame. This operation may be easily accomplished with a handformer.



4 Hook bottom edge of face over flange on AIR SEAL FRAME. Pull face tight against wall with screws.

The result - An air-tight seal with a minimum of installation time. A flexible gasket on the back of the face seals against the stackhead - the AIR SEAL FRAME seals the opening around the duct. Positive prevention against streaking caused by dirt in the duct or around the outside of the duct.

This revolutionary new streakproof construction combined with smart modern styling makes AIR CONTROL'S new No. 70 two-piece gravity registers an outstanding value. Your assurance of satisfied customers.

See your AIR CONTROL Jobber or write for complete information about this outstanding register.

AIR CONTROL PRODUCTS, Inc.
Main office -- **COOPERSVILLE, MICHIGAN**

A complete line of Gravity and Air Conditioning Registers and Grilles — Attic and Roof Ventilators — Accessories — AIRTROL Air Conditioning Units.

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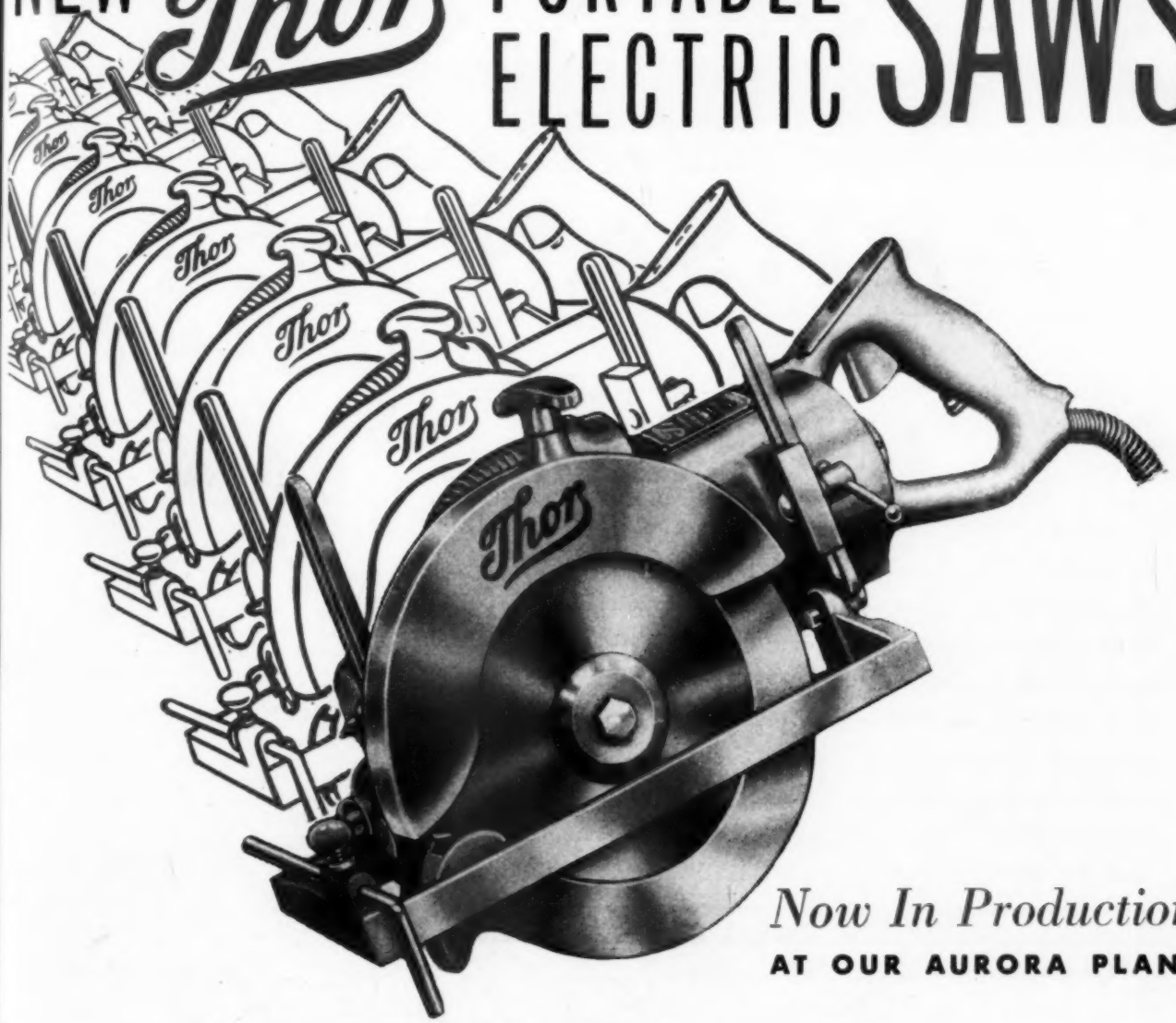

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Here they come—*packed full of new tool features*—the new Thor Portable Electric Saws!

Now in production in volume for delivery through Thor distributors everywhere, these new Thor Saws are available in 6″, 7″ and 8″ blade sizes for all types of cutting in wood or metal.

See these new Thor Saw features for yourself *now*—call your nearby Thor distributor for a demonstration.

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Warm-Air Heating

AMERICAN ARTISAN

Covering All Activities in Residential Air Conditioning and Small Commercial Cooling, Warm Air Heating, Sheet Metal Contracting and Fabricating

J. D. Wilder, Editor
J. J. McCullough, Associate Editor A. A. Kennedy, Assistant Editor

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In This Issue

IT seems pretty certain, now, that the gigantic housing program for veterans—as originally conceived and announced—is a physical impossibility in the time specified.

This has been evident for some time to practical builders, engineers, architects, sub-contractors and others who are expected to make the beautiful paper scheme an actuality.

The program had two strikes called before it got started. There just were not enough materials available or in possible production to meet the schedule. There have been delays by strikes from the raw material to the finished product. There never was enough labor to do this job—there is not enough now—there won't be enough in the next two years.

Equally important, Washington is now finding out (as many authorities declared months ago) the program was based upon poor logistics: (1) Houses can't be built for the sales prices set up in the program; (2) veterans can't and won't pay such sales prices; (3) veterans don't want $10,000 houses, they want $40 per month rental flats; (4) there was too little provision in the program for stimulating construction of multi-family dwelling units; (5) there's been too much bally-hoo and politics and too little horse sense and these weaknesses have now caught up with the planners.

So, as Arnold Kruckman points out in his Washington Letter on page 52, readers should now keep a sharp eye peeled for drastic changes in housing program.

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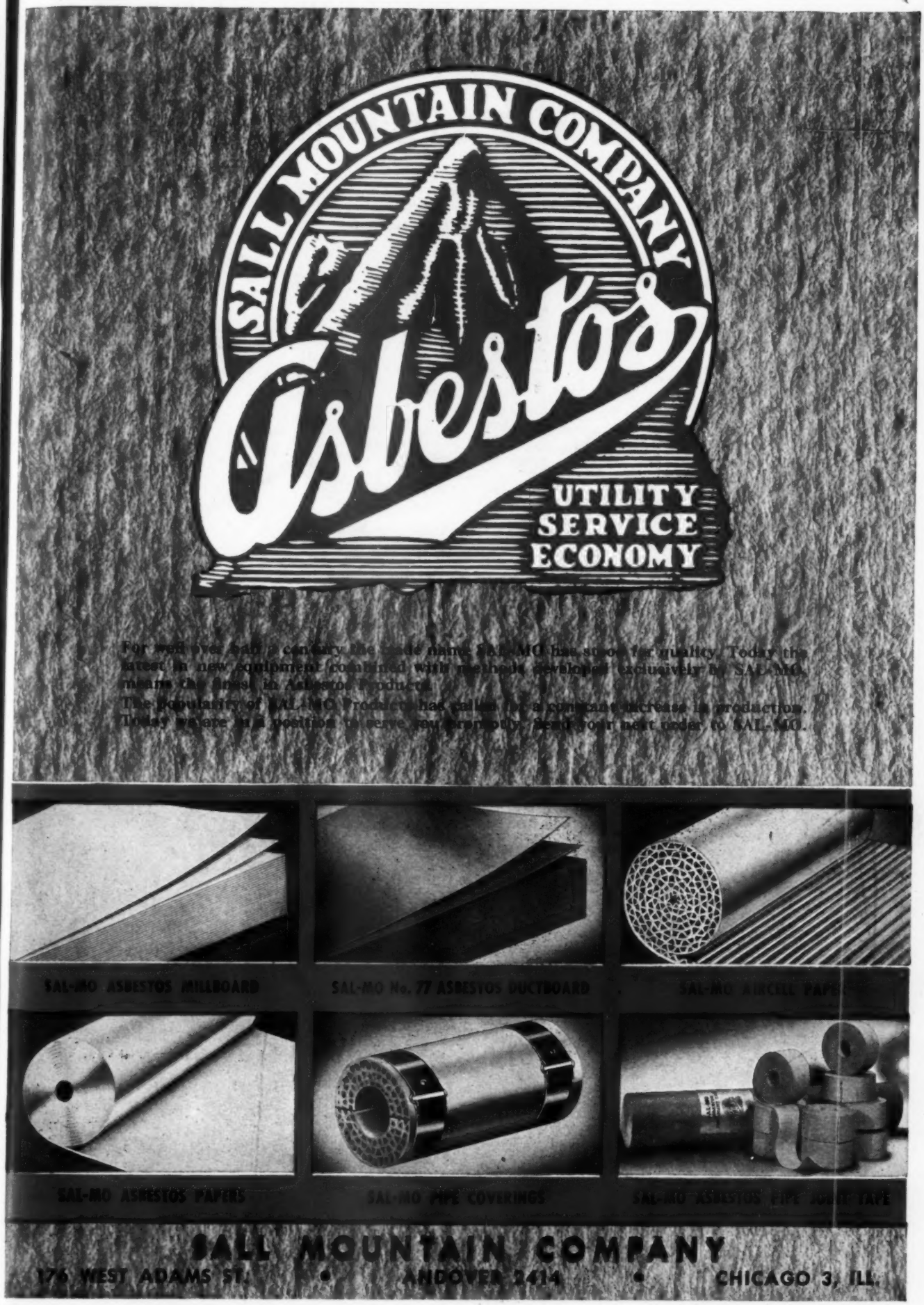
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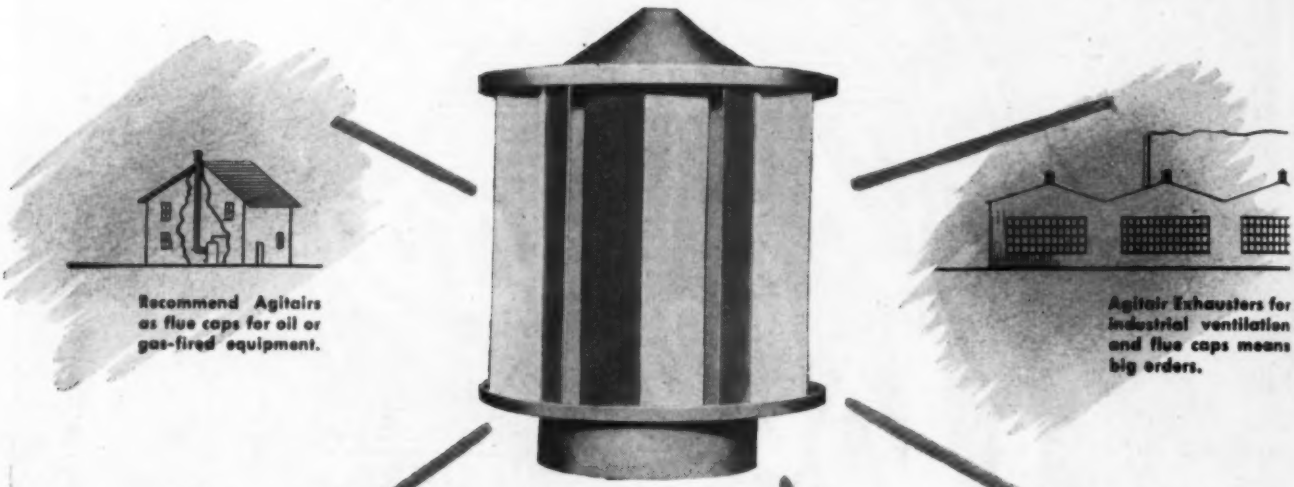

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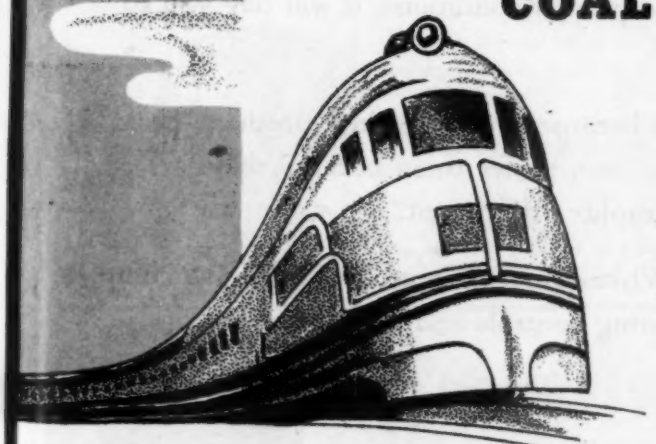
★ *Simplicity*



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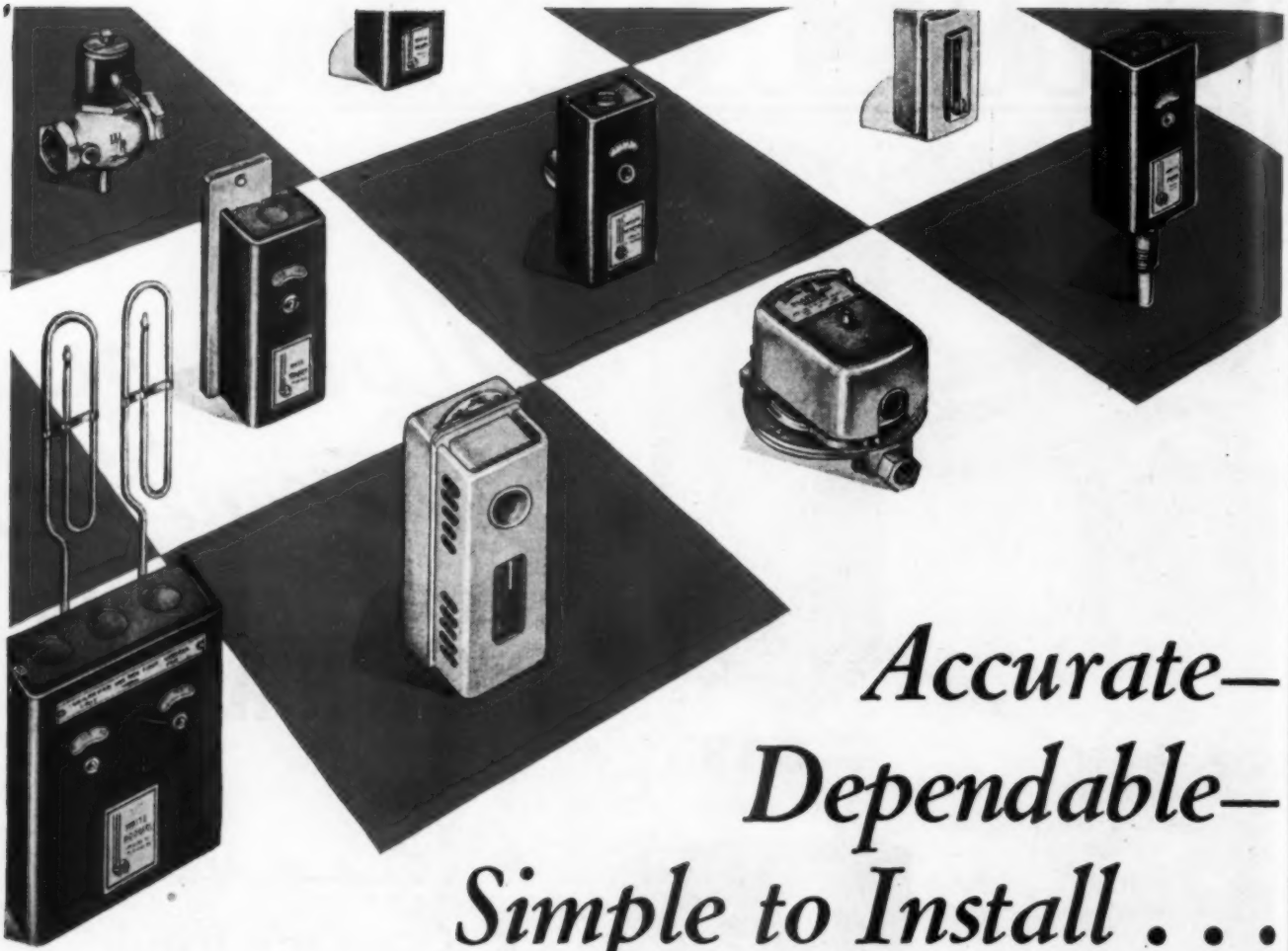

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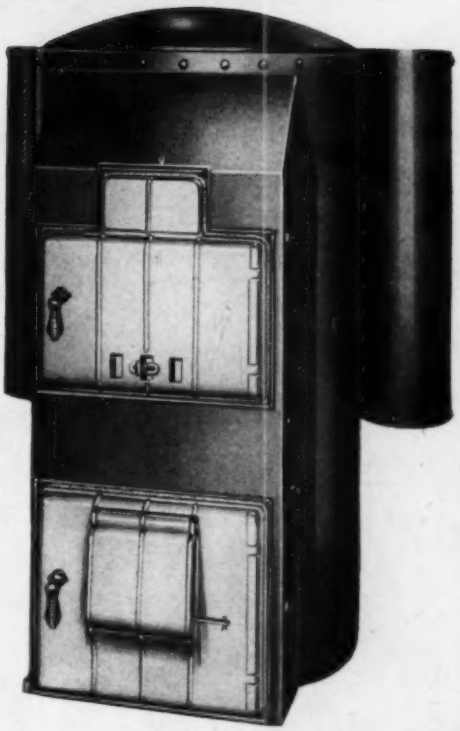

1. Drum, pouch, feed and ash throats, and door seats are *all one piece,* riveted and welded for permanent tightness.
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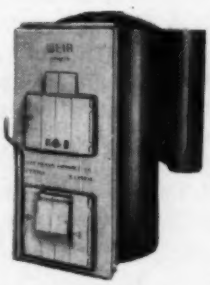
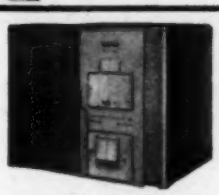


The Integral Heating Element design and construction, besides making the new WEIR *positively, permanently* leakproof, completely encloses the fire in heavy refractory - lined steel. Pressed steel front is not exposed to the fire. Thoroughly tested and proved, the WEIR "U" Series sets new standards of cleanliness, efficiency and ease of installation.



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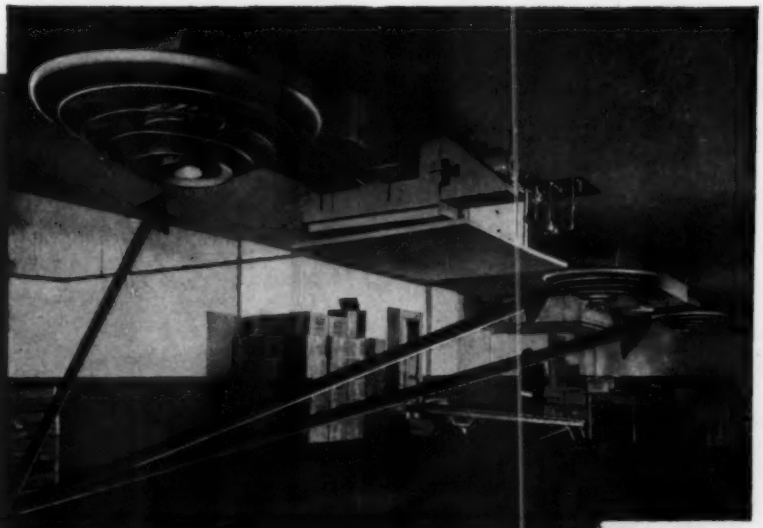

You're looking at the shipping room of the Bowman Dairy plant at River Forest, Illinois. Originally it was equipped with two ceiling-type unit coolers with the usual horizontal grilles . . .

Blasts of air from these unit coolers were then so severe that employees could not endure room temperatures of 50° F.

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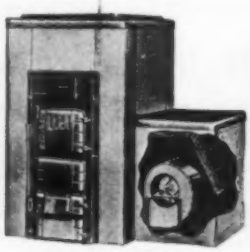

SERIES AC-700
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Air Conditioning Unit

SERIES 700
Coal-Fired, Steel
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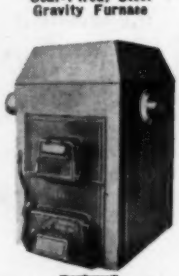

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HEATING AND AIR CONDITIONING UNITS ● FURNACE PIPE AND FITTINGS

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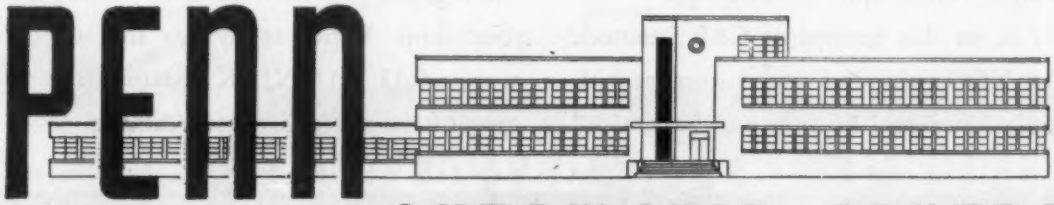

AUTOMATIC CONTROLS

FOR HEATING, REFRIGERATION, AIR CONDITIONING, ENGINES, PUMPS AND AIR COMPRESSORS

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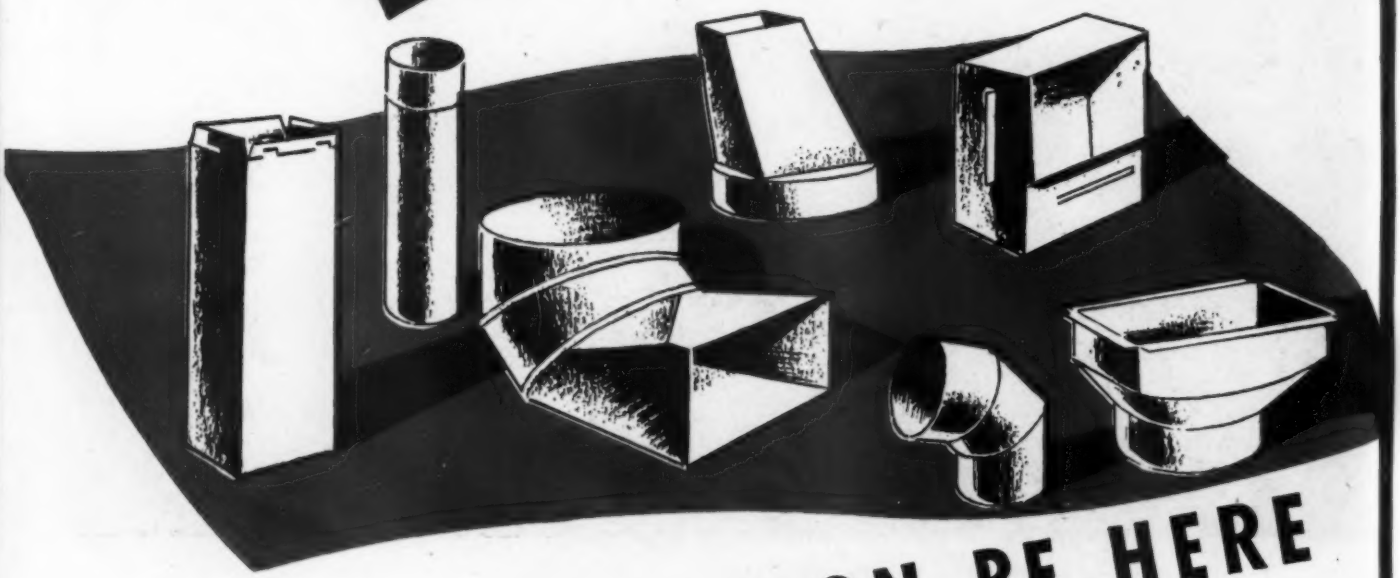


THE TIME WILL SOON BE HERE WHEN YOU CAN CLEAN UP WITH C&L LAMNECK FITTINGS!

Wherever smart tinsmiths and furnace *specialists* are on the job, happy shop owners are saying, "We're back in the *profit* groove with America's *finest* galvanized furnace pipe and fittings!"

Are YOU in on this harvest of C&L Lamneck business? Are YOU satisfying your customers with the QUALITY Duct and Fittings and galvanized Pipe that has been *tops* for many, many years?

Get on the profit band-wagon now! Send immediately for the brand new C&L LAMNECK Catalog. It's packed with money-making ideas for your shop. Write today for the name of your nearest C&L LAMNECK distributor and for your copy of the new illustrated catalog.

CLAYTON & LAMBERT MFG. CO.

SALES OFFICES
LOUISVILLE 10, KENTUCKY

Middletown Division

FACTORY
MIDDLETOWN, OHIO

PLASTEEL eliminates "Deterioration" from ROOFING • SIDING and building accessories

Modern construction methods introduced steel into buildings because it was the lightest and strongest (compared to bulk and weight) material that could be used. Ever since its first use builders have been striving to achieve PERMANENCY in steel construction—freedom from deterioration, rust and corrosion.

PLASTEEL—the physical and chemical combination (by heat and pressure) of Plastics—Steel and pure Mineral Mica has accomplished this in roofing, siding and building accessories.

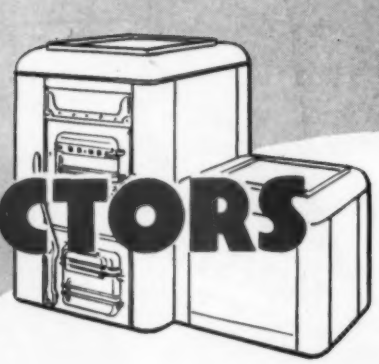
The steel core gives this Modern Permanent Material the desired strength—the Plastic gives it the protection from deterioration caused by fumes, weather and atmospheric conditions, by hermetically sealing the pores and surfaces of the steel or metal. And the Mica gives it the final protective finish and appearance . . . the ideal combination that provides permanent protection.

Plasteel requires no maintenance—no painting—no patching—because there is no rust deterioration. Let us send you samples and complete data. Write, wire or phone!

PROTECTED STEEL PRODUCTS

Standard Life Bldg., Pittsburgh, Pa. · Plant: Washington, Pa.

Selling VICTORS means . . .



More Profit with Easier Sales

the furnace with extra Heat Radiating

Fins Save Fuel!

Victor FINS provide 57⅓ more *square feet* of heating surface in the 24 inch size than in the ordinary furnace of the same size. More heat from less fuel.

It's Easy to Sell the Best.

Wherever you find a VICTOR dealer you find a man who knows he is selling the best in heating equipment. Knowing this, he sells with confidence. He knows that every easily installed VICTOR will give years of unusual heating satisfaction with a minimum of service—the latter is a big profit item.

DeLuxes Are Available . . .

Sure Fire Selling Features of the DeLuxe

- EXTRA HEAT RADIATING, PATENTED "FINS".
- TRIPLE FLUE ECONOMIZER, or radiator provides more perfect combustion, reduces loss of heat in chimney and smoke pipe. (Photo at left shows long effective fire travel).
- BOILER PLATE STEEL construction welded and pressure riveted assures CLEAN HEAT and no smoke or gas leakage.
- ONE PIECE BASE RING provides perfect alignment of all parts; simplified installation.
- AUTOMATIC DAMPER CONTROL provides direct draft when feed door is open, automatically closes when door is shut.

THERE IS NO SUBSTITUTE FOR EXPERIENCE

Write now **about a VICTOR DEALERSHIP . . .**

HALL-NEAL FURNACE CO.

VICTOR *Quality Furnaces Since 1890*

1322 N. CAPITOL AVENUE · INDIANAPOLIS 7, INDIANA

how much does a decision cost?

Perhaps it's just a penny postal card, a three-cent stamp, or the cost of a phone call. By whatever means you seek it, the cost of a decision is usually small when you're dealing with Weirton. The main reason is that the cost of delays in securing decisions is eliminated.

At Weirton, all the men who may be needed for decisions on customer problems—whether on prices, quantities, metallurgy, deliveries or other matters—are always within quick reach of one another. For Weirton's operations are integrated: sales, laboratory, production, shipping—all departments are "under one roof" to cut down delays when customers need quick action.

That's why it is easier for customers to get the right steel plus quick, economical service from Weirton . . . why dealing with Weirton frequently pays extra dividends to steel buyers.

WEIRTON STEEL COMPANY

NATIONAL STEEL

WEIRTON STEEL CO.

WEIRTON, W. VA. *Sales Offices in Principal Cities*

Division of **NATIONAL STEEL CORPORATION** *Executive Offices, Pittsburgh, Pa.*

1946

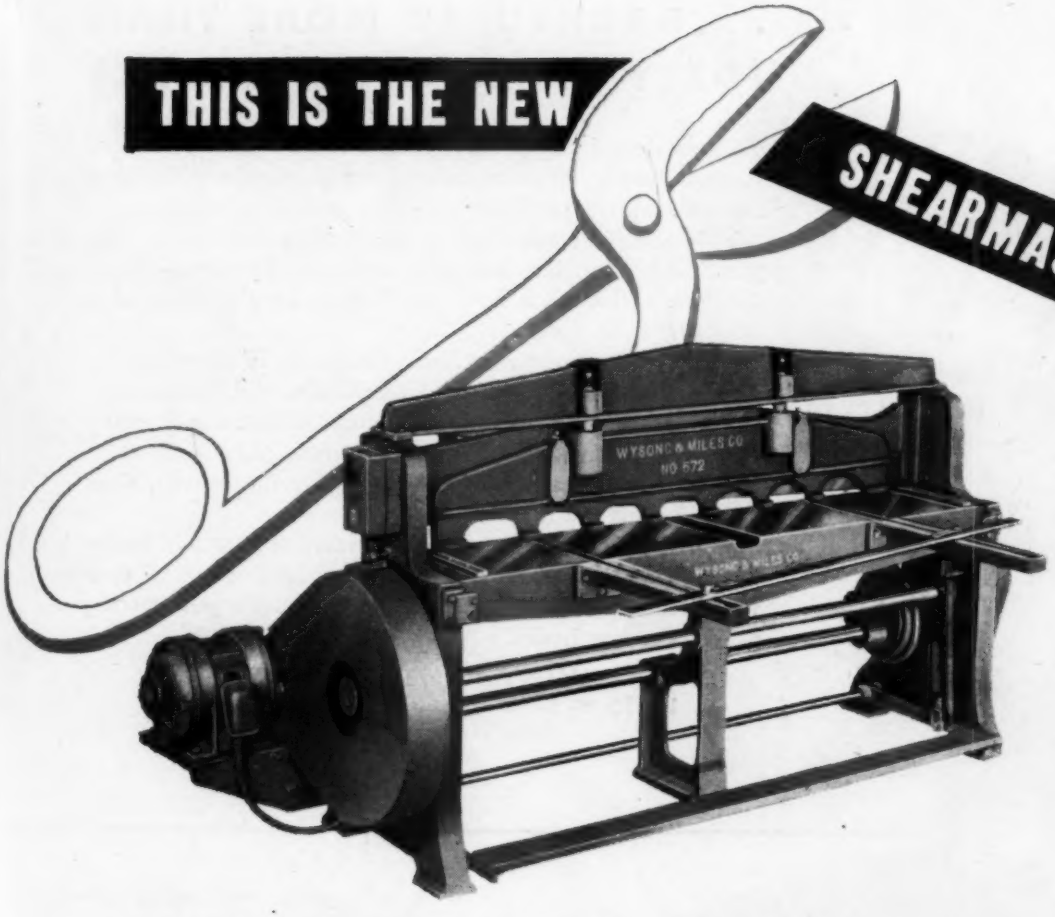
You're the DEALER-

Deal yourself a pat hand . . . full of aces the other boys can't trump. Get the Stok-A-Fire franchise . . . . the line that lets you take every trick. Profit-minded dealers say "the Stok-A-Fire deal hits the jackpot every time." Write or wire for details.

WATCH FOR THE
ANNOUNCEMENT OF OUR
Gas-a-Fire
GAS CONVERSION BURNER

Stok-A-Fire Co. 6504 OLIVE BLVD. • ST. LOUIS 5, MO.

THIS IS THE NEW SHEARMASTER



THE WYSONG AND MILES Shearmaster, a modern and distinctive Power Shear for higher standards of performance.

Accurate, rugged and compact . . . 14 gauge capacity . . . made in two sizes, No. 552-52″ and No. 572-72″.

A few outstanding features are . . . a heavy and well designed cross member is securely mounted above bar for upper blade, to preclude possibility of twist, spring or deflection . . . positive holddown has greater clamping surface—no crawling, creeping or marring of sheets . . . a substantial center support for both cross shafts on 72″ machine . . . new and improved gauges both front and back—the back gauge is quick acting rack and pinion type . . . a bevel gauge and side gauges for bed are standard equipment . . . massive semi-steel bed and housings . . . a trouble free clutch designed for long life of service.

Ask for complete information on new and better Power Shear.

WYSONG and MILES Co.

Designers and Builders of

MACHINE TOOLS AND WOODWORKING MACHINERY FOR OVER 45 YEARS

GREENSBORO, NORTH CAROLINA

Time-Tested

. . . BACKED BY MORE THAN FORTY YEARS OF EXPERIENCE

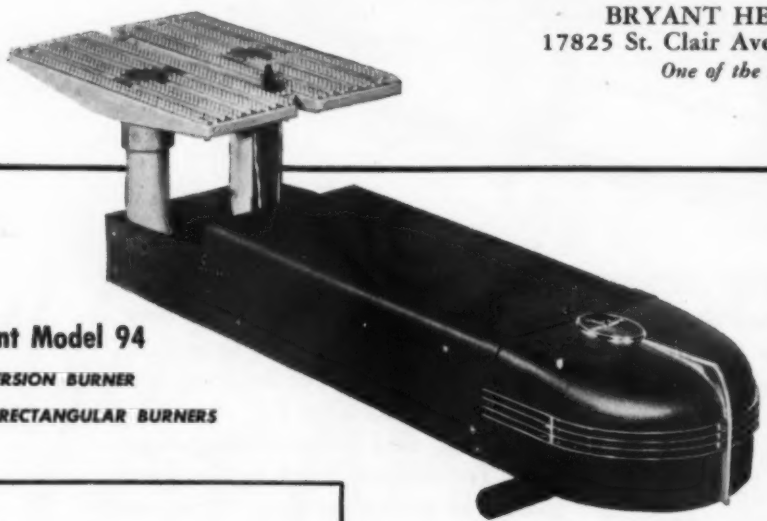
To countless families across the nation the Bryant Conversion Burner has meant relief from old-fashioned heating methods. It has provided healthful, *automatic* comfort.

This unit is *no newcomer* to the heating field. Year after year it has been installed *with confidence* by thousands of families, and dealers have found it to be a product that *sells itself!*

The Bryant Conversion Burner is simple in construction, contains no moving parts which will wear out. Its controls are completely enclosed, yet the control chamber is easily removed for inspection or cleaning. It is completely automatic—simply press the button to start the burner, then *forget it* until the heating season is over!

With the Bryant Conversion Burner, almost *any* boiler or furnace that is in *reasonably* good condition can be converted into a modern, completely automatic gas heating plant in a few hours!

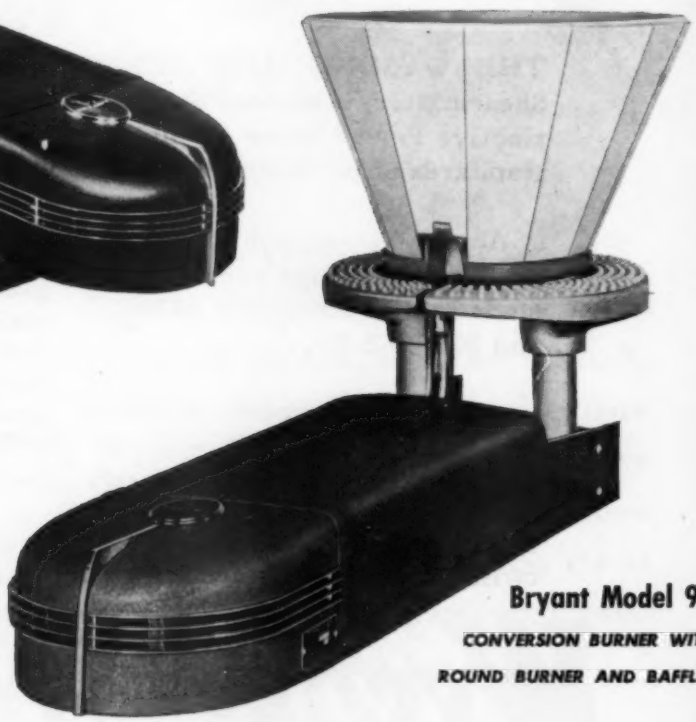
BRYANT HEATER COMPANY
17825 St. Clair Avenue, Cleveland 10, Ohio
One of the Dresser Industries



Bryant Model 94
CONVERSION BURNER
WITH RECTANGULAR BURNERS

bryant
GAS
HEATING

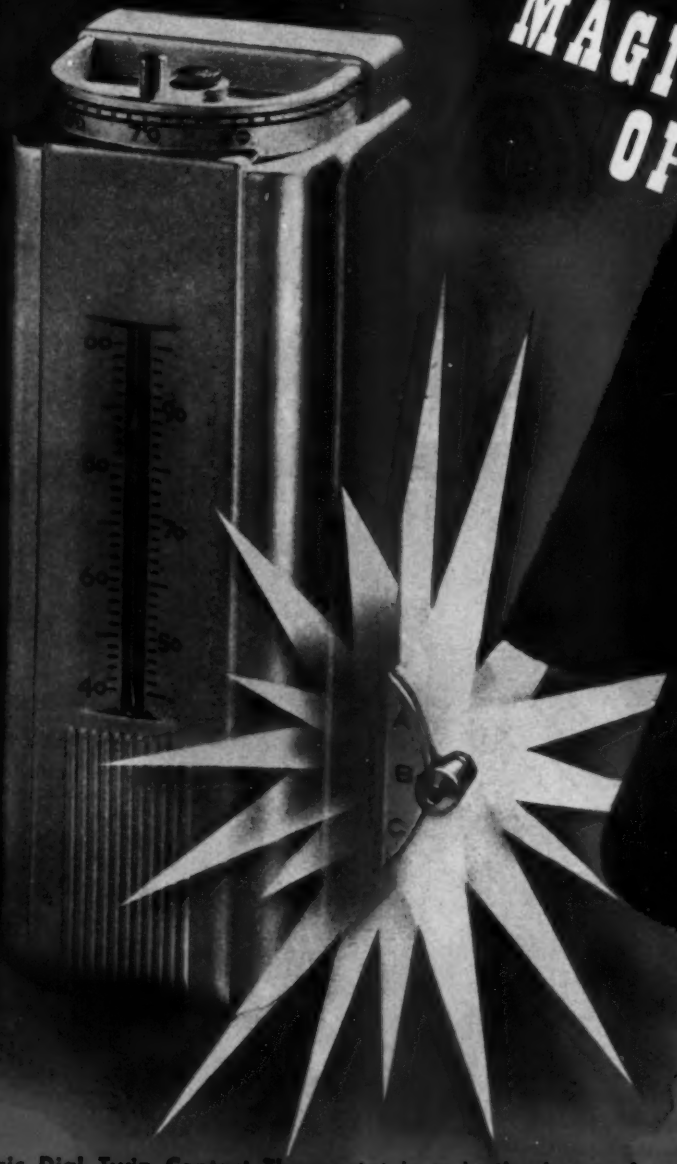
LET THE PUP BE FURNACE MAN



Bryant Model 94
CONVERSION BURNER WITH
ROUND BURNER AND BAFFLES

The most complete line of gas heating equipment in the nation!

MAGIC DIAL CONTROL OF ROOM TEMPERATURE



This Magic Dial Twin Contact Thermostat is truly the heart of any automatic heating system. The operating periods of the heating plant are automatically varied by the Magic Dial to provide uniform temperature with greater comfort and fuel economy. Only Perfex provides the Magic Dial—only with the Magic Dial can thermostat "on" periods be conveniently varied by the home owner according to individual comfort preferences, characteristics of the heating plant and outdoor weather. An extremely sensitive built-in "interval timer" produces control that leads instead of lags temperature changes, synchronizes heat input with heat losses and minimizes overheating or under-shooting of temperature setting.

Investigate the extra advantages, the exclusive operating features offered by Magic Dial Thermostat, and other Perfex Twin Contact Controls. They're engineered to operate automatic heating units at peak efficiency—an important reason why more and more leading manufacturers of automatic heating equipment confidently and carefully pre-select Twin Contact Controls to bear their trade names.

PERFEX CORPORATION, MILWAUKEE 7, WIS. • Perfex Controls Ltd., Toronto, Ont.

OUTSTANDING FEATURES

- Positive snap-action Twin Contacts avoid false starts.
- The Magic Dial adjustment varies length of firing periods.
- Heat from "interval timer" applied to bimetal by conduction assures uniform, short firing periods.

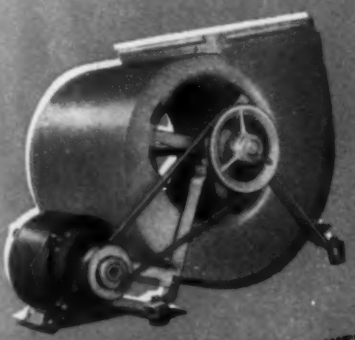
PERFEX

TWIN CONTACT CONTROLS

MANUFACTURERS OF AUTOMATIC CONTROLS BEARING THE TRADE MARK NAMES OF LEADING PRODUCERS OF AUTOMATIC HEATING SYSTEMS AND APPLIANCES

These OUTSTANDING FEATURES make GAR-WOOD TEMPERED-AIRE *Easier to Sell!*

1. THE NEW completely automatic Tempered-Aire is an integrally built furnace burner unit that is backed by 20 years of research.
2. THE ECONOMIZER, located below the firebox, contains many narrow tubes to provide greater heating surface and more intimate contact of hot gases and air. Cold air from the blower is forced between these tubes at high velocity before reaching the hotter firebox.
3. THE BURNER and firebowl combustion chamber are integrally built. The unit has completely demonstrated the soundness and value of its design features to produce a clean fire with a minimum of excess air.
4. THE POWER UNIT maintains a definite controlled pressure that assures the proper mixture of oil and air to produce a uniform flame regardless of draft variation. All parts are die-formed and welded into a single rigid unit. The power unit is rubber mounted for silent operation.
5. NEAT, COMPACT, beautifully styled Tempered-Aire is designed to meet the heating requirements of every type and size home.



SILENT, EFFICIENT AIR BLOWER

Designed to deliver a generous quantity of air against the friction of duct systems found in actual practice with the motor drawing a minimum of wattage. The shaft is mounted on self-aligning bearings set in rubber pillow blocks, and the discharge outlet is connected with canvas.

WHY YOU SHOULD BE A GAR-WOOD DEALER

Write Today for This Free Booklet

GAR WOOD INDUSTRIES, INC.

HEATING DIVISION • DETROIT 11, MICHIGAN

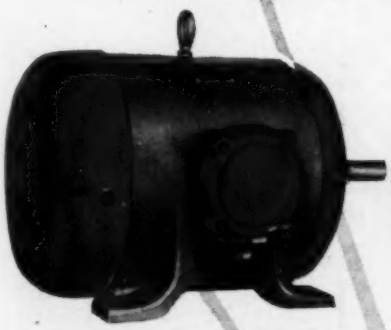
Canadian Distributors: Engineering Industries, Ltd.
114 Laird Drive North, Leaside, Toronto 12, Ontario

HOISTS AND BODIES • WINCHES AND CRANES • TANKS • ROAD MACHINERY • MOTOR BOATS

Century Form J Open Rated Motor

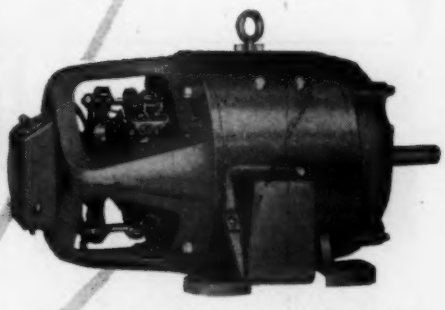
Century Splash Proof Motor

Century Totally Enclosed Fan Cooled Motor



Century Explosion Proof Motor

Century Slip Ring Motor



Century Direct Current Motor

Get the Top Performance Your Machine is Designed to Give—*With a Standard* CENTURY MOTOR

Century Jet Pump Motor

The wide range of types and sizes of Century motors from 1/20 to 400 horsepower — plus all the standard frames that give protection from destructive atmospheres, falling solids and dripping liquids — means that nearly all electric motor driven machines can have the advantages of Century motors.

Selection of the correct Century motor at the time the equipment is designed can offer many advantages. Standard motors often mean a saving in cost over special designs; redesign of equipment is simplified and the motor does not become obsolete.

When you are designing electrically powered equipment get complete information on the correct Century motor that will give it top performance.

Century C MOTORS

CE-478

CENTURY ELECTRIC COMPANY • 1806 Pine Street • St. Louis 3, Missouri

Offices and Stock Points in Principal Cities

HERE'S THE WAY TO SELL IT AT A PROFIT

DETROIT FLOAT VALVE EQUIPPED UNITS

Homes, new and old—stores—small churches—small meeting halls—all are in the market for oil heat in the smaller package units. Oil heat is clean and reliable—and at the same time economical. It *sells.*

"Detroit" Float Valve equipped space heaters, furnaces, ranges, and water heaters are the package units which meet needs of the big mass market. They are moderate in first cost—economical to use.

"Detroit" Valves have stood high in industry favor for 20 years. They are simple, extremely reliable—long lasting. Servicing is confined to an easy cleaning and adjusting operation.

Be sure they're on the heaters you plan to sell—they are evidence of quality.

DETROIT LUBRICATOR COMPANY *General Offices:* 5500 TRUMBULL AVENUE DETROIT 8, MICHIGAN

Division of American Radiator & Standard Sanitary Corporation

Canadian Representatives: Railway and Engineering Specialties Limited, Montreal, Toronto, Winnipeg

"Detroit" Heating and Refrigeration Controls • Engine Safety Controls • Safety Float Valves and Oil Burner Accessories • "Detroit" Expansion Valves and Refrigeration Accessories • Stationary and Locomotive Lubricators

"DETROIT"

How many years ahead...

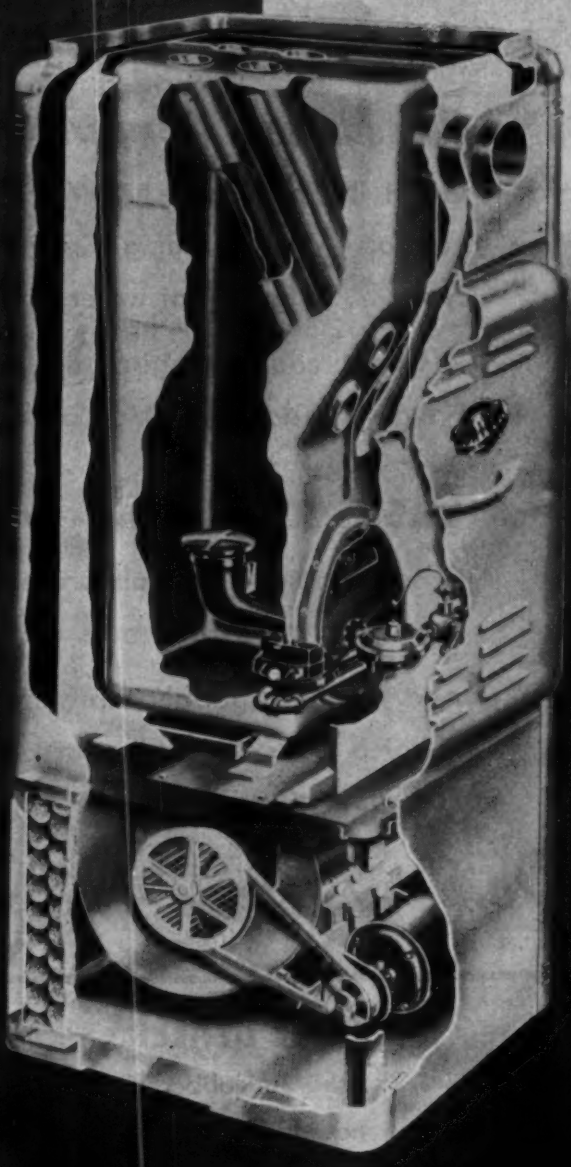
The MOR-SUN UTILITY MODEL U-4-G

Not so many years ago - automobiles were made by hand - they were expensive - crude - and not too dependable.

The introduction of mass precision production gave the public a great deal more for its money in efficiency - appearance - dependability.

Morrison Steel Products combined their many years' production experience in the automotive field with their extensive facilities to create the MOR-SUN Pressed Steel Forced Warm Air Furnace - die stamped throughout - new standards of Comfort, Economy and Appearance.

The Model U-4-G Gas Fired Utility Furnace - illustrated herewith - is adaptable to both basement and utility room installations in the small home. AGA approved. Completely assembled at the factory.



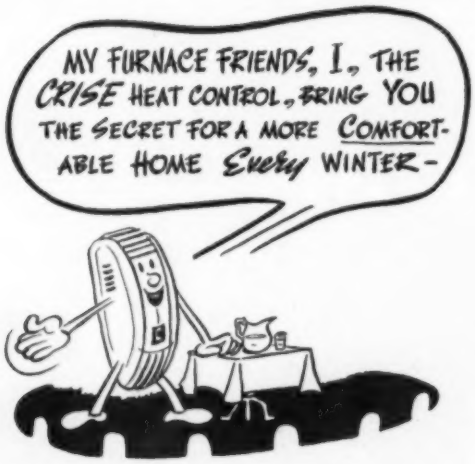
MOR-SUN PRESSED STEEL FURNACES

MORRISON STEEL PRODUCTS, INC.

BUFFALO 7, N. Y.

"The Sun Never Sets with MOR-SUN!"

HOW TO WIN CUSTOMERS — and Influence Sales



LET THIS LITTLE WONDER SPEAK FOR YOU — in Profits

STARTING RIGHT NOW!

Up-and-Down Temperatures waste coal, are unhealthy.

CASH IN, beginning NOW, on customer desire for greater all-winter comfort — by installing Crise Controls on hand-fired furnaces of all types . . . steam, hot water or warm air.

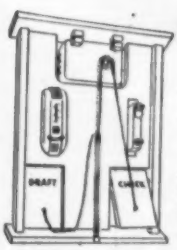
Resultant coal saving of up to 20% makes a hit with old customers, brings you new ones . . . and pays you handsomely.

Easy to Install — Big Profits for You

Crise Automatic Controls are engineered for simple installation . . . you can serve more customers more quickly, make more friends.

And there's a goodly margin of profit in each sale. Yet Crise Control is not a luxury . . . all your customers can afford it, need its benefits. The market's *there* . . . GET *YOUR* SHARE!

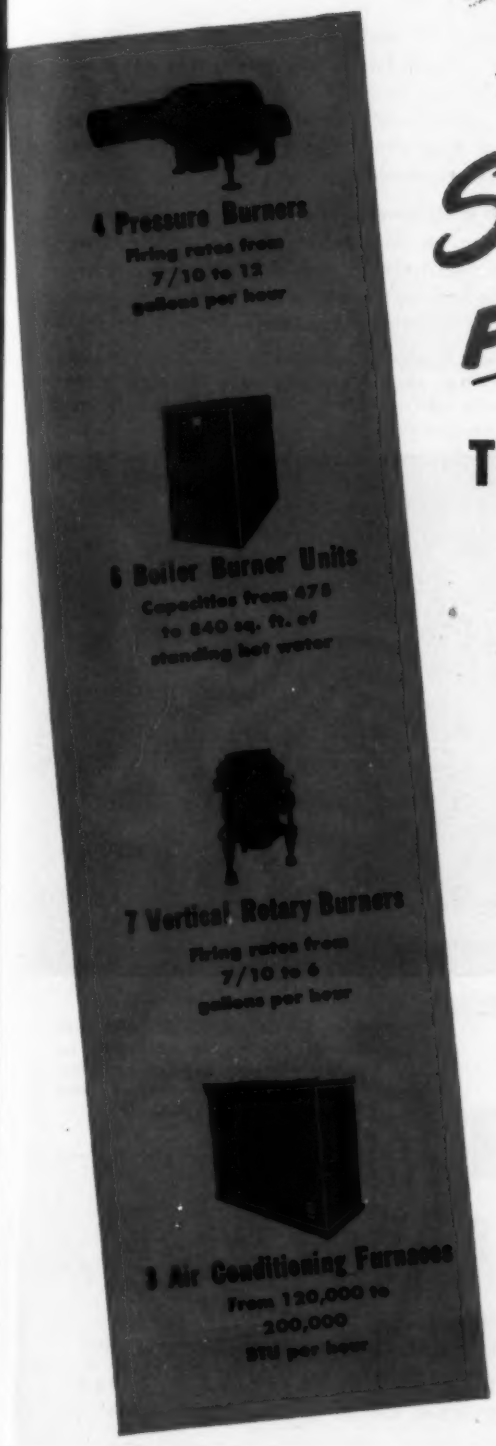
Don't Delay — SEE YOUR CRISE JOBBER at once



CRISE DEALERS — *build your sales!*

Ask your jobber about the Demonstration Panel he can get for you . . . it will help you sell in your shop and at the customer's home.

The CRISE MANUFACTURING CO.
COLUMBUS 16, OHIO


4 Pressure Burners
Firing rates from 7/10 to 12 gallons per hour
6 Boiler Burner Units
Capacities from 475 to 840 sq. ft. of standing hot water
7 Vertical Rotary Burners
Firing rates from 7/10 to 6 gallons per hour
3 Air Conditioning Furnaces
From 120,000 to 200,000 BTU per hour

Selling FLUID HEAT PRODUCTS

OPENS THE DOOR TO MORE FUEL OIL CONTRACTS!

Selling Fluid Heat Products gives you an edge in building a steady, profitable fuel oil business . . . by gaining you entrance to more homes. Here's why:

1 The Fluid Heat line is really complete . . . enables you to make more sales by satisfying more customers . . . with a trademark that has won solid consumer acceptance by dependable performance since the beginning of oil heating.

2 The Fluid Heat line's engineering and construction is kept ahead of competition by a wide-awake development laboratory . . . headed by engineers long experienced in the industry.

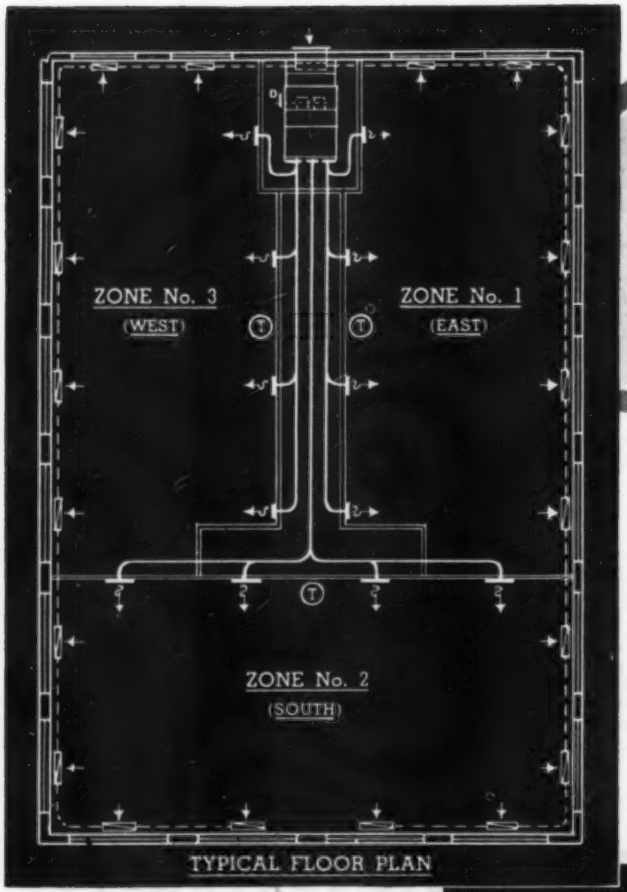
3 You sell Fluid Heat line under a friendly Dealer Franchise, which is mutually profitable. And remember, our stake is in oil heating . . . we'll go all-out to help you compete with other types of heating.

Write today for full details on this profitable Fluid Heat Dealer Franchise. It doesn't cost a thing . . . and it can pay you big dividends. Address: Fluid Heat Division, Anchor Post Products, Inc., 6720 Eastern Ave., Baltimore 24, Maryland.

fluid heat
PRODUCTS

"WORLD'S ECONOMY CHAMPION"

Manufactured by the Anchor Post Products, Inc.
Baltimore, Md., Established 1892



TYPICAL FLOOR PLAN

ZONE CONTROL using CLARAGE "Blow-Thru" Multitherms

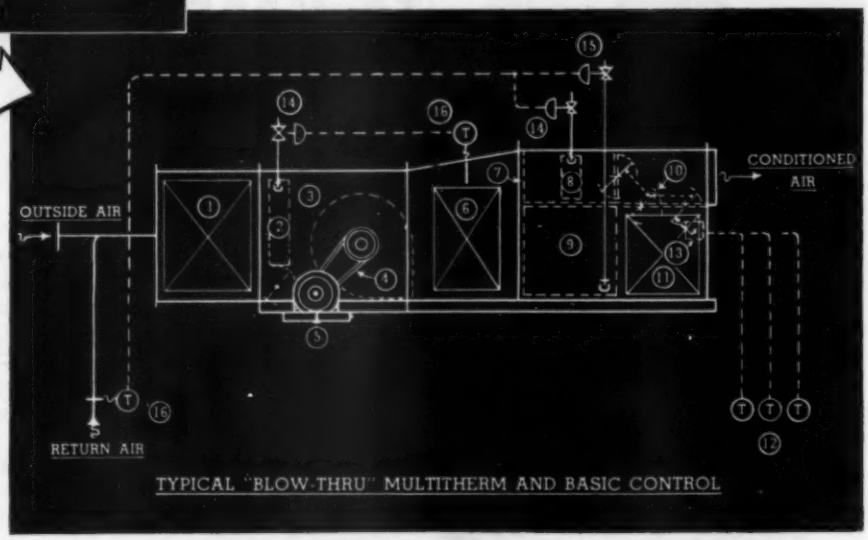
Now one Clarage "Blow-Thru" Multitherm Unit can be used to air condition various parts of your building exactly as requirements warrant. A typical 3-zone installation is shown at left. Unit can be arranged to serve from two to six zones — an exclusive Clarage development.

ZONE CONTROL compensates for the difference in solar radiation on different parts of a building during different periods of the day. It also takes into account variations in exposure, wind velocity, construction, and internal heat loads.

Thus winter and summer, if desired, you can maintain various temperatures in various parts of your building. Each zone is automatically controlled independently — yet only one conditioning unit necessary!

EQUIPMENT ARRANGEMENT

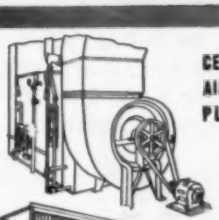
1. Filter Section
2. Tempering Coil with Steam Distributing Tubes
3. Fan Section
4. V-Belt Drive
5. Motor
6. Fan Discharge Section with Access Door
7. Distributing Plate
8. Reheat Coil with Steam Distributing Tubes
9. Cooling Coil
10. Zone Double Mixing Dampers (3 sets)
11. Access Door
12. Zone Room Thermostats
13. Zone Damper Motors
14. Steam Valve
15. Cold Water or Refrigerant Valve
16. Temperature Controller

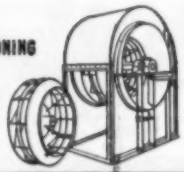


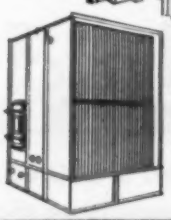
TYPICAL "BLOW-THRU" MULTITHERM AND BASIC CONTROL

SOME OF OUR OTHER PRODUCTS

UNIT HEATERS


CENTRAL STATION AIR CONDITIONING PLANTS

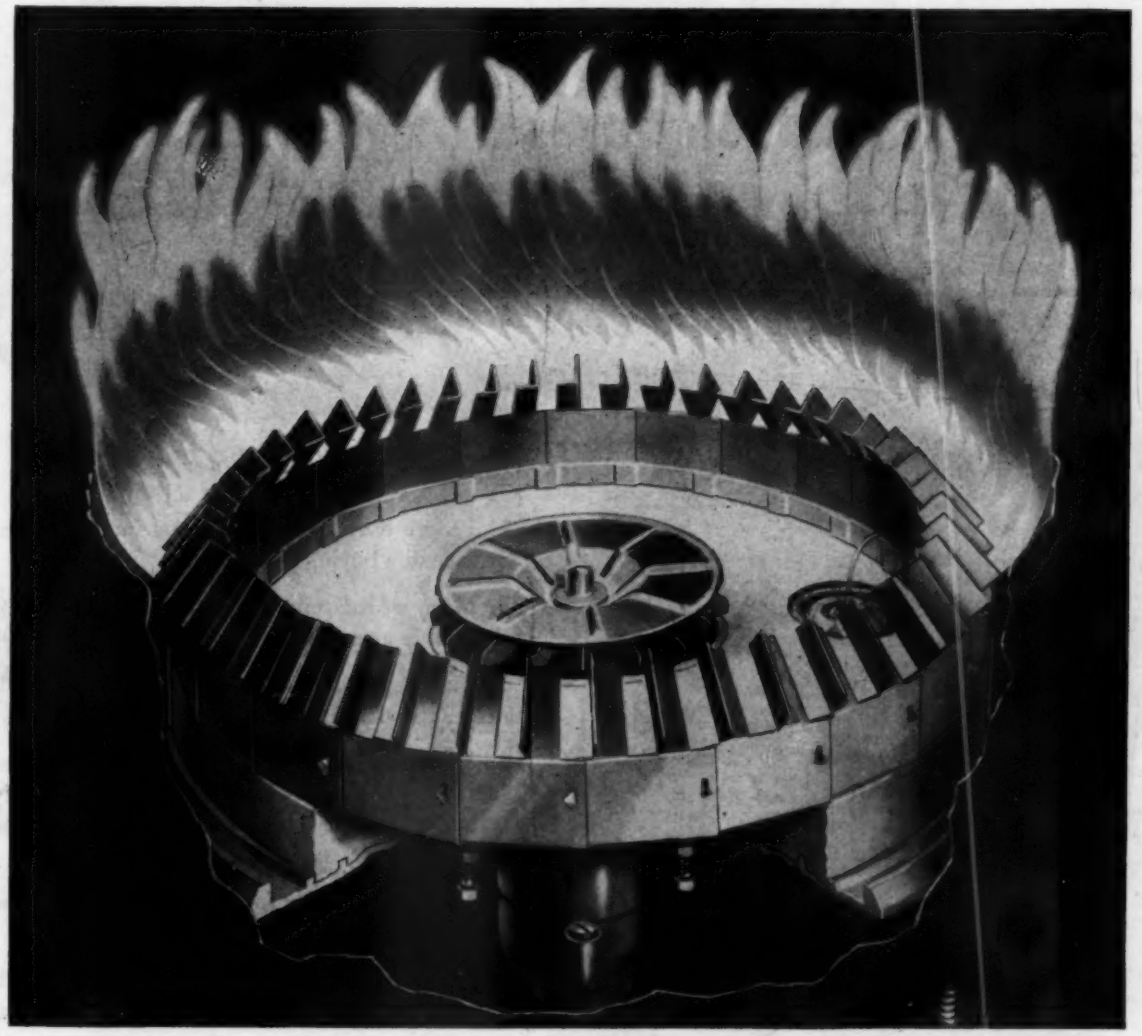

AIR CONDITIONING AND VENTILATING FANS


AIR WASHERS

Clarage ZONE CONTROL air conditioning is adaptable to practically any type of building — industrial, commercial, etc. Write for further data.

CLARAGE
FAN COMPANY
Kalamazoo, Michigan
APPLICATION ENGINEERING OFFICES IN ALL PRINCIPAL CITIES

Toridheet
ROTARY BURNER



High heating efficiency plus spectacular economy

Those are not *claims* for Toridheet Rotary, they epitomize its reputation.

It takes a great burner to win such a reputation.

It takes continuing good performance to hold it.

Toridheet Rotary's national record among dealers for low maintenance cost is a "natural" that grows out of high efficiency, plus spectacular economy. Just as natural a combination as ham and eggs or strawberries and cream.

TORIDHEET DIVISION

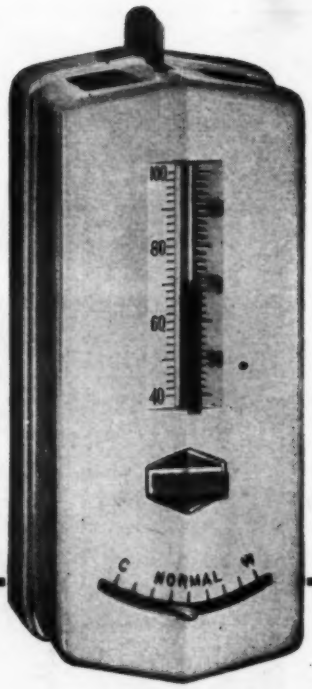
CLEVELAND STEEL PRODUCTS CORPORATION, CLEVELAND 2, OHIO

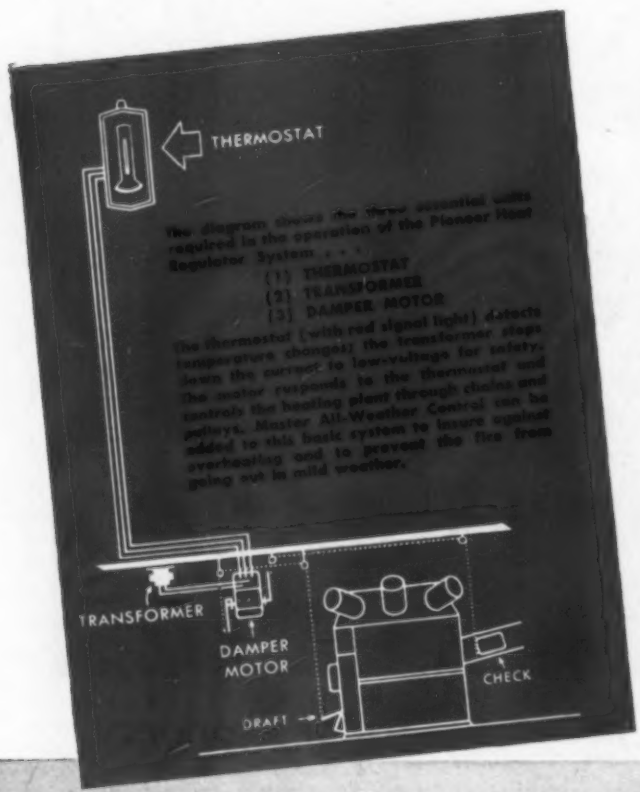
OIL BURNERS • OIL BURNER BOILERS • OIL WATER HEATERS
AIR CONDITIONING UNITS • COAL AND GAS FURNACES

Available Now!

make this

your best season for selling PIONEER CONTROLS





5 reasons why!

1. People have money for home improvements and are in a buying mood.

2. Many of the things they want to buy are not obtainable at present.

3. But they *can* buy Pioneer Controls immediately . . . without waiting.

4. Sound purchases of this kind involving convenience and comfort for the home are extremely attractive. People *will* buy if you tell them the story.

5. Payment is easier for the owner at this time of year.

For details about the damper regulator with the little red signal light and other unique features, write at once.

FOR WARM AIR • HOT WATER • STEAM
hand-fired, solid fuel heating systems

PIONEER CONTROLS

A quality product manufactured by

MASTER

The MASTER ELECTRIC Co.
Aircraft and Electrical Controls Division
DAYTON 1, OHIO

ANNOUNCING the new Type 500

Mueller Climatrol Gas Conversion Burner

An attractive, efficient, highly salable unit

This new unit is built in three sizes (maximum B.t.u. input): 125,000; 175,000; 225,000. Listed by the American Gas Association for operation with natural, mixed, or manufactured gas. In appearance and performance, it's everything your customer expects of the latest equipment on the market. Write for bulletins.

L. J. Mueller Furnace Co., 2010 W. Oklahoma Ave., Milwaukee 7, Wis.

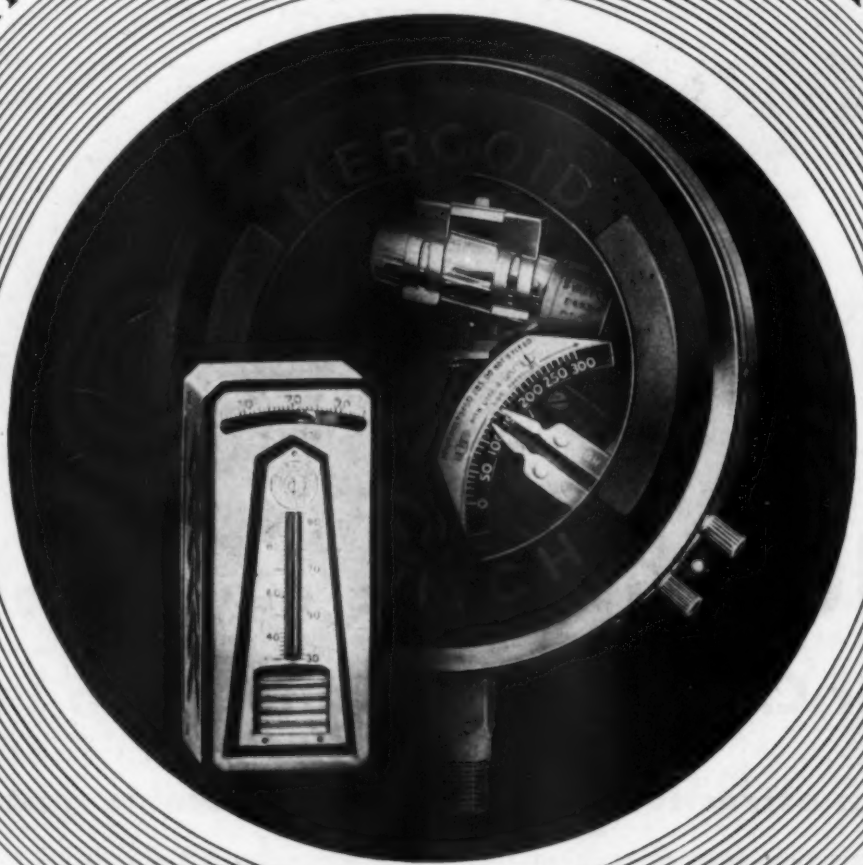
MUELLER Climatrol

REG. U. S. PAT. OFF. D-63

MERCOID CONTROLS

TEMPERATURE ✩ PRESSURE ✩ LIQUID LEVEL ✩ ETC.

FOR AUTOMATIC HEAT CONTROL AT ITS BEST IN THE HOME ● ALSO FOR IMPORTANT INDUSTRIAL CONTROL APPLICATIONS



Mercury switches are used exclusively in all Mercoid Controls. ✩ They insure more dependable control performance, and longer control life. ✩ Write for Catalog Nº 600A, for complete information

THE MERCOID CORPORATION ✩ 4201 BELMONT AVE., CHICAGO. 41. ILL.

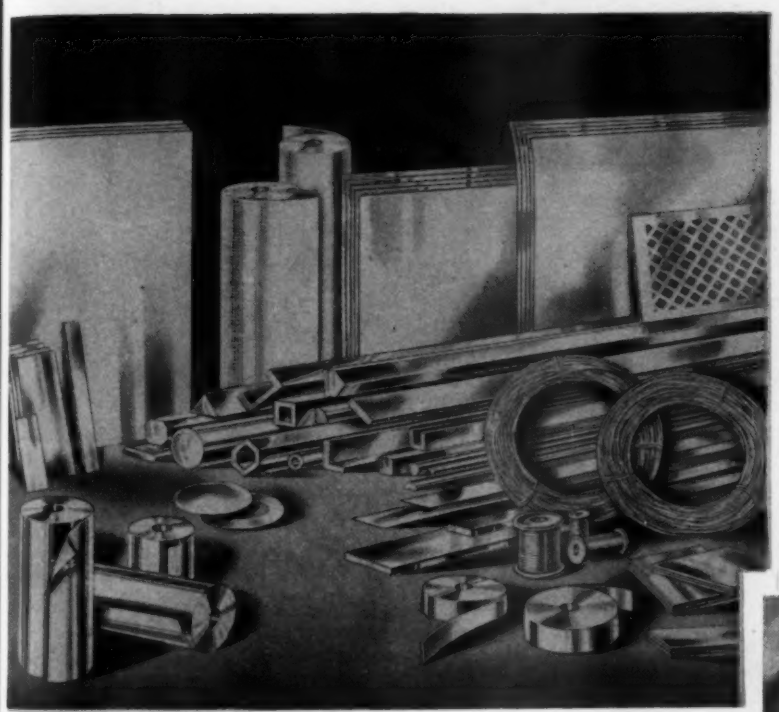
HUSSEY

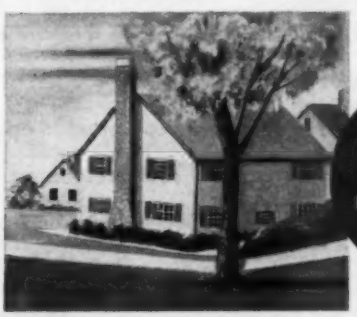
the Metal with a Brilliant future

COPPER PRODUCTS Include

- COPPER SHEET
- COPPER STRIP
- COPPER RIVETS
- COPPER ROLLS
- COPPER NAILS
- COPPER GASKETS
- COPPER ANODES
- COPPER EAVES TROUGHS
- COPPER CONDUCTOR PIPE
- PHOTO ENGRAVERS COPPER PLATE
- COPPER BOILER TUBE FERRULES

For your Copper and Copper Product needs, contact your Hussey warehouse—always ready to serve you—located in every important industrial center.





C. G. HUSSEY & CO.

(Division of Copper Range Co.)

ROLLING MILLS AND GENERAL OFFICES: PITTSBURGH, PA.

Warehouses in Principal Cities

HUSSEY WAREHOUSES CARRY STOCKS OF COPPER AND BRASS PRODUCTS FOR PROMPT SHIPMENT

A NEW HOME DESERVES THE BEST

J & C POWER HEATERS ENGINEERED TO FIT THE JOB

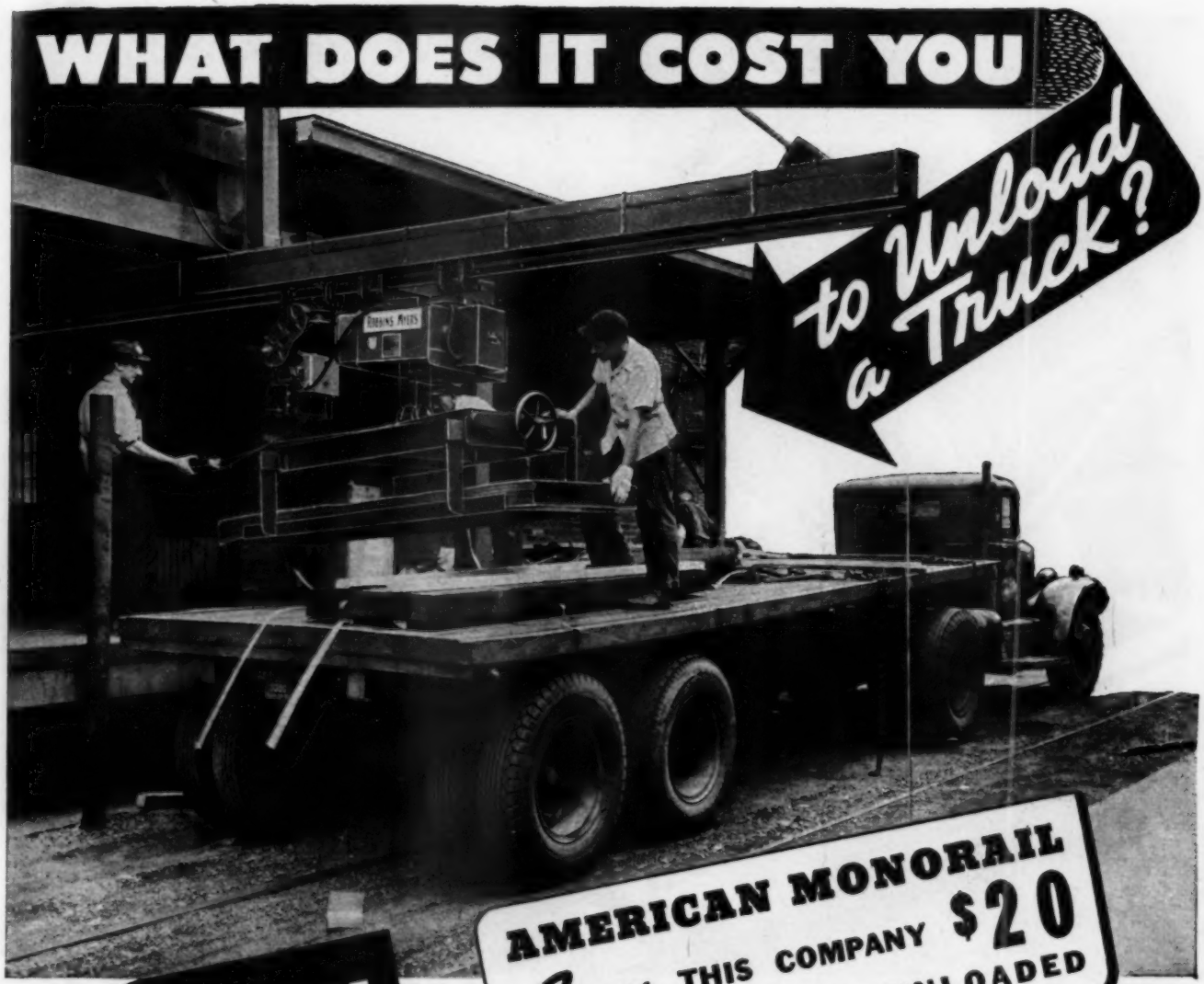
J & C Power Heaters belong in every home where the wise owner knows the value of protecting his investment with the best equipment available. They give the home owner the ultimate in heating ease and comfort, and they relieve him of worry about repair and replacement costs. They are ruggedly built of high quality steel, welded into a one-piece leakproof unit that prevents heat loss and keeps soot and fumes from entering air stream. They conserve fuel, because they are engineered with a 90% direct radiation surface that captures more heat for distribution by blower. They protect the owner in changing fuel markets, because most J & C Power Heaters are easily converted to operate on coal, gas, or oil. There are J & C Power Heaters built to heat all types of structures—large factories and warehouses as well as small homes. There is a J & C Power Heater, with BTU output from 160,000 to 2,800,000, made especially for every heating job.

J&C

JACKSON & CHURCH COMPANY

WORK WELL DONE SINCE 1881 • SAGINAW, MICHIGAN

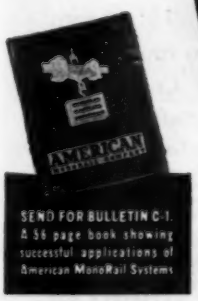
WHAT DOES IT COST YOU to Unload a Truck?



AMERICAN MONORAIL
Saves THIS COMPANY **$20**
ON EVERY TRUCK UNLOADED

MOTORIZE *with* **MONORAIL** *for*

Faster Handling
Accurate Spotting
Reduced Fatigue
Added Safety
Automatic Operation
Finger-tip Control
Fits Any Overhead Track with smooth bottom flange.



SEND FOR BULLETIN C-1. A 56 page book showing successful applications of American MonoRail Systems

● Former time to unload a 16-ton capacity truck was 30 manhours — with American MonoRail Motorized Equipment on the job it now takes only 2 manhours. This results in a saving of twenty-eight manhours per truck.

More trucks are now unloaded with same docking facilities. Stock is automatically handled from truck, to storage, to machines, resulting in increased storage capacity, no damage to metal and quicker, more efficient handling from storage to machine.

Costs are always reduced in direct proportion to the number of manhours saved. Let an American MonoRail Engineer show you how it can be done in your plant.

THE AMERICAN MONORAIL CO.

13133 ATHENS AVE. - CLEVELAND 7, OHIO

"THIS PAINT GOT A RAW DEAL!"

"Yep, a raw deal . . . Paint and galvanizing don't get along together . . . the zinc coating dries out the paint oils and the paint gets brittle and starts to peel and flake off.

"What's the answer? I'd say always use ARMCO PAINTGRIP, the special galvanized steel that takes and holds paint. PAINTGRIP is Bonderized at the mill, and I've seen myself how paint really sticks to it—a good deal longer than it does on ordinary galvanized steel, even when it's acid-etched.

"Just give the paint this break and you won't have to repaint every year or so. It's the best insurance I know."

HERE'S THE SITUATION WITH YOUR STEEL SUPPLIER

Your Armco Distributor is swamped with orders because civilian users have been starved for steel for five years. He's doing his best to be fair, and to catch up with your demands. He may not be able to supply all the ARMCO PAINTGRIP, Stainless Steel and other special grades you need for sheet metal work, furnace work and air ducts; but keep in touch with him and give him a chance to serve you when he can. Meanwhile, Armco mills are running full blast, trying to get steel through to you. The American Rolling Mill Company, 3071 Curtis Street, Middletown, Ohio.

Export: The Armco International Corporation

GALVANIZED PAINTGRIP ARMCO STEEL

THE AMERICAN ROLLING MILL COMPANY

SPECIAL-PURPOSE SHEET STEELS

CHRYSLER AIRTEMP

"Profit Insurance" for Dealers

Week in and week out, Chrysler Airtemp hammers away to further increase the already important public acceptance for these advanced automatic home heating, "Packaged" Air Conditioning, and commercial and industrial refrigeration products. For example, the public from coast-to-coast was exposed to more than 30 million individual sales messages during the first half of 1946!

Such advertising is *future profit insurance*—assurance for Chrysler Airtemp dealers that in the years ahead they will be selling products which have widespread public acceptance!

Further profit insurance for the future is the big Chrysler Airtemp product development program. Chrysler Airtemp has one of the finest research and development laboratories and staffs to keep its famous products as far in advance every year as they are today.

Chrysler Airtemp plans have been projected far into the future. All are designed to support a *highly successful and leading* dealer organization.

1, 2, or all 3

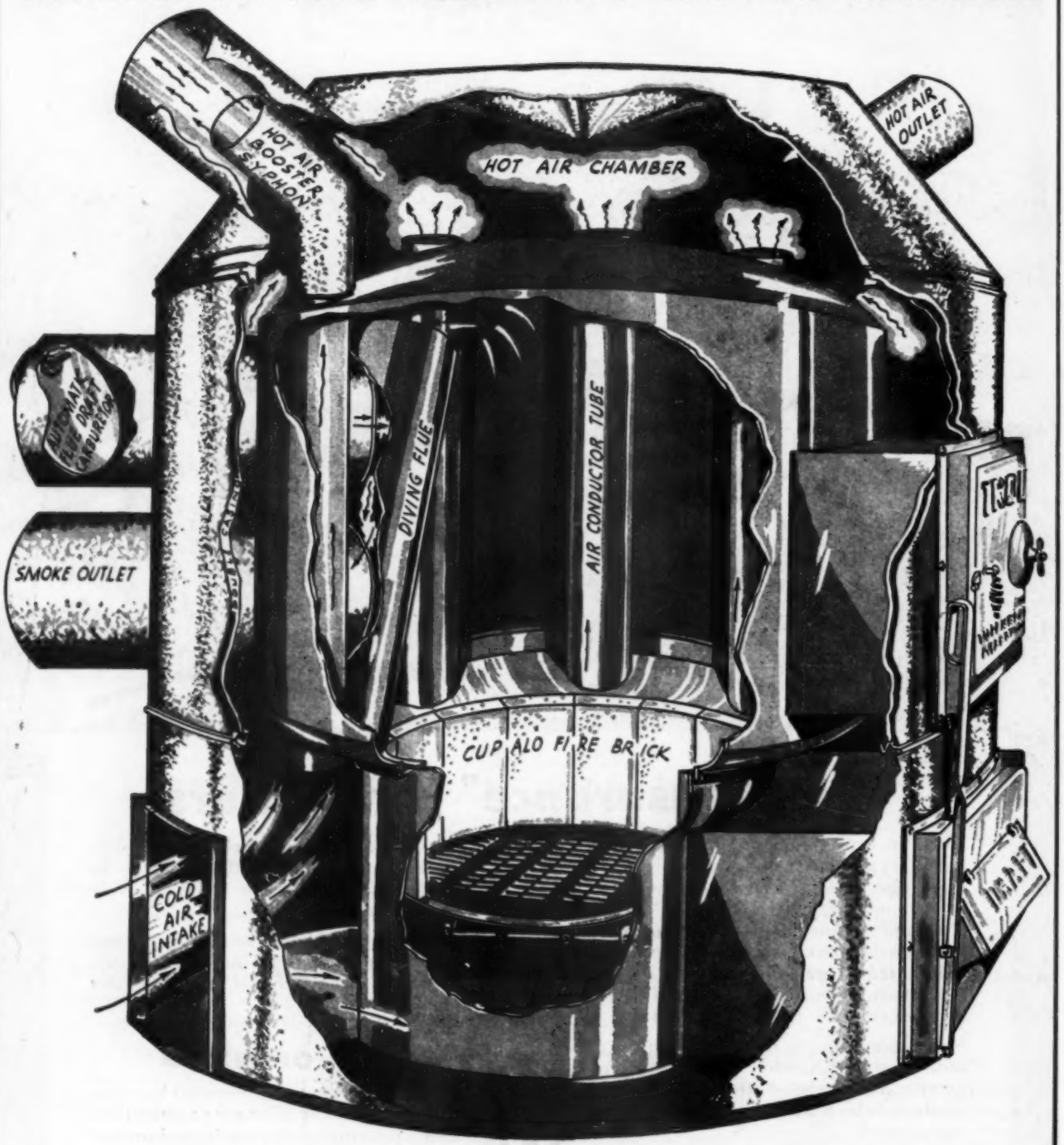
Chrysler Airtemp dealer agreements are written for one, two or all three product lines—real opportunity for year 'round profits. For details, write Airtemp Division, Chrysler Corp., Dayton 1, O. In Canada: Therm-O-Rite Products, Ltd., Toronto.

AIR CONDITIONING
HEATING • COOLING • REFRIGERATION

RADIANT TUBERATOR HEATING

"the stoker furnace"

DESIGNED and CONSTRUCTED for STOKER INSTALLATION



Gas Tight Revolving Ash Pit Permits Stoker Installation at Any Angle
No Radiators to Collect Fly Ash
All Primary Heating Surface

Information on Request Regarding Exclusive Sales Policy and Availability

Write Dept. ELF. **Wheeling Furnace Corp.** Martins Ferry, Ohio

DEALERS . . .

FOUR MILLION HOMES NEED STOKERS

Cash in with STOKERMATIC

Here's your opportunity to move in on a made-to-order market. Post-war Stokermatics are now rolling off production lines . . . in *quantity*. Dependable, efficient, fool-proof . . . they're backed by 19 years of stoker development.

LOOK AT ALL THESE STOKERMATIC FEATURES . . .

your assurance of happy customers:

SILENT UNIT DRIVE: Sturdy, dependable. Only 3 moving parts, sealed in oil. Positive shear pin protection. Guaranteed three years.

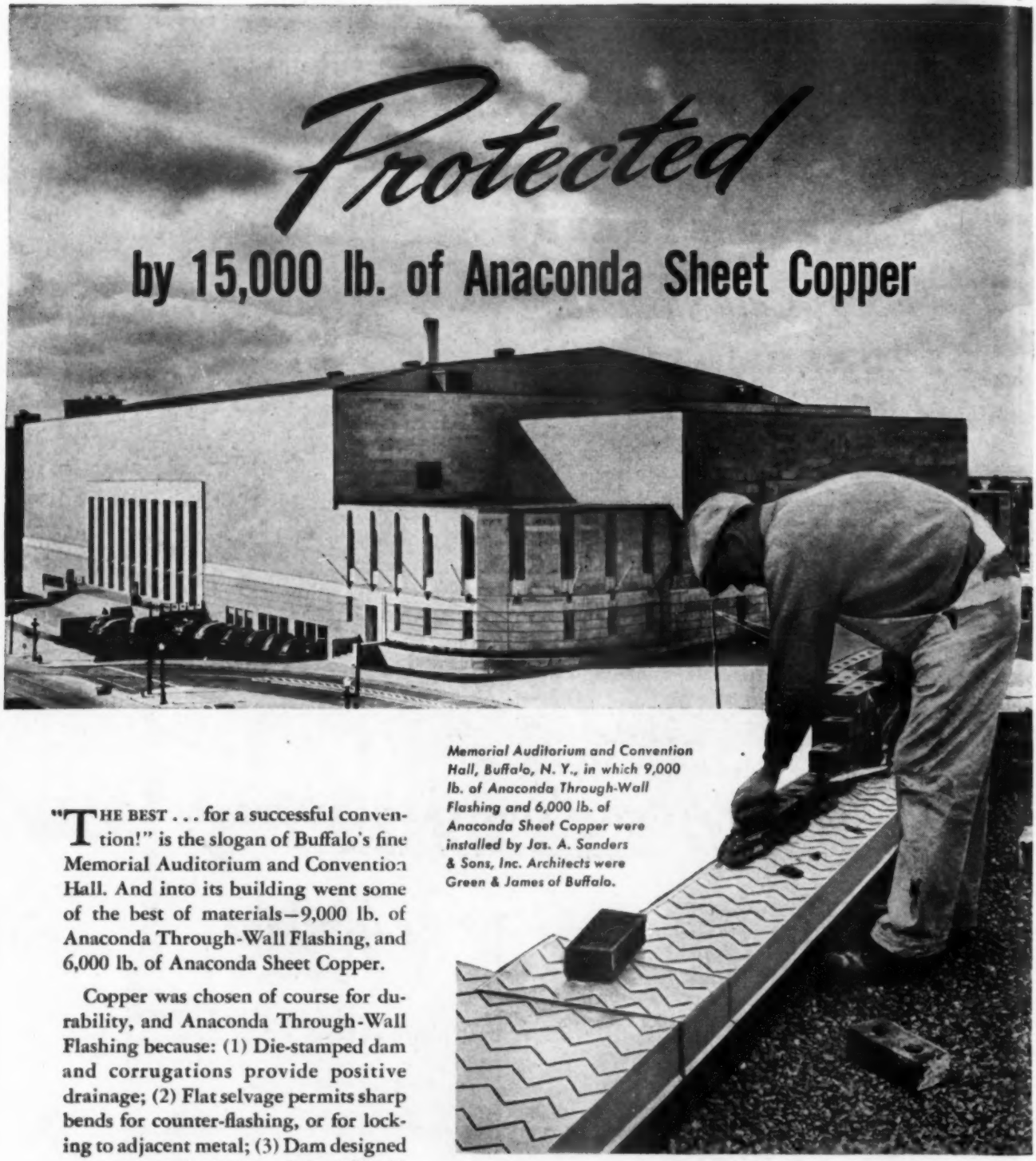
AIR-COOLED CAST IRON BURNER: Sectional tuyeres for easy expansion. Seasonal clean-out tube adjustable to any convenient angle.

FULL AUTOMATIC CONTROL: Takes over furnace tending. Stoker operates automatically for a few minutes each hour to maintain "pilot" fire in mild weather.

DUST-TIGHT STEEL HOPPER: Coated inside for rust resistance. Slight internal air pressure maintained to prevent "smoke-back".

Get ready now to handle this easy-to-sell line. Write today for full information.

ADDRESS: **STOKERMATIC**
570 LEXINGTON AVENUE, NEW YORK 22, N. Y.



Memorial Auditorium and Convention Hall, Buffalo, N. Y., in which 9,000 lb. of Anaconda Through-Wall Flashing and 6,000 lb. of Anaconda Sheet Copper were installed by Jos. A. Sanders & Sons, Inc. Architects were Green & James of Buffalo.

"THE BEST . . . for a successful convention!" is the slogan of Buffalo's fine Memorial Auditorium and Convention Hall. And into its building went some of the best of materials—9,000 lb. of Anaconda Through-Wall Flashing, and 6,000 lb. of Anaconda Sheet Copper.

Copper was chosen of course for durability, and Anaconda Through-Wall Flashing because: (1) Die-stamped dam and corrugations provide positive drainage; (2) Flat selvage permits sharp bends for counter-flashing, or for locking to adjacent metal; (3) Dam designed so as to permit placing edge within ¼ inch of face of wall, and still allow for pointing of mortar; (4) Thoroughly water-tight joints are formed when flashing is locked endwise by nesting one or two corrugations.

For detailed description and suggested specifications, write for Publication C-28, or refer to Sweet's Architectural Catalog.

ANACONDA

Anaconda

COPPER

AMERICAN BRASS COMPANY

General Offices: Waterbury 88, Connecticut

Subsidiary of Anaconda Copper Mining Company

In Canada: ANACONDA AMERICAN BRASS LTD., *New Toronto, Ont.*

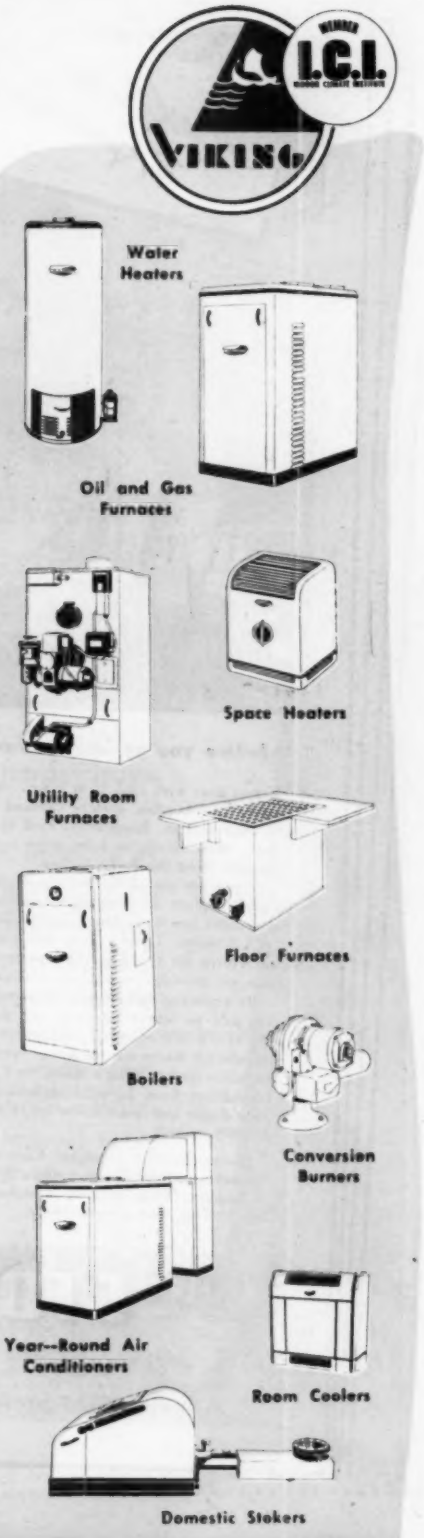
WHY THAT SATISFIED LOOK?

Meet a Contractor-Dealer who belongs to that select group of profit-wise business men franchised by VIKING. He knows where he is going. He knows the value of handling *both* heating and cooling equipment under one leading manufacturer's name. He benefits daily from the full cooperation of the progressive VIKING Distributor who serves him. There is, indeed, good reason for that satisfied look.

There's room for more VIKING Dealer franchises in some territories. Perhaps you would like to think about joining. Here are some of the advantages:

1. ***The VIKING line includes gas, fuel-oil or coal-fired equipment for every heating and cooling job you are going to figure—in the new housing and modernization projects in your community.***
2. ***New VIKING merchandise for you to sell and install during the remainder of 1946.***
3. ***A higher percentage in 1947 when VIKING'S expanded facilities will step up production to meet the housing demands that will be rolling full speed ahead by that time.***
4. ***An active, protected and profitable connection with a line that is the talk of the industry because of excellence of design and engineering and because of the sound distributor policy supporting it.***

You will find it good business to come in with this satisfied group. Write to us on your firm's letterhead for the name of the VIKING Distributor nearest you. Then, plan to go over and talk to him about your own successful future.



The VIKING Complete line of Heating, Cooling and Year-Round Air Conditioning Equipment — Fuel-Oil, Gas or Coal-Fired.

THE VIKING MFG. CORPORATION

1747 Chester Ave., Cleveland 14, Ohio

WARM IN WINTER . . . COOL IN SUMMER

COMING SOON!

Powerful NEW Advertising Reaching MILLIONS Monthly!

Starting again in September issues—on the newsstands in August—colorful, hard-hitting Dust-Stop* advertisements will build profitable business for you. *American Home, Better Homes & Gardens* and *House Beautiful* will carry the campaign. More than 5,000,000 families will be reached. And note how this ad, like others in the series, keeps selling *modern warm-air heating*—in short, does a *complete* selling job for you and the industry.

Plus

A NEW PROMOTION KIT TO HELP YOU GET EXTRA SALES

Yes, the FREE Dealer Promotion Package for *Fall* is just about ready. You'll find that it, too, is complete—with all of the field-tested selling helps that have proved so effective in seasons past. So, check over your stock of Dust-Stop Filters now and get set for the big fall business. Contact your distributor or write Owens-Corning Fiberglas Corporation, Department 930, Toledo 1, Ohio.

In Canada, Fiberglas Canada Ltd., Toronto, Ontario

—before you go into another heating season!

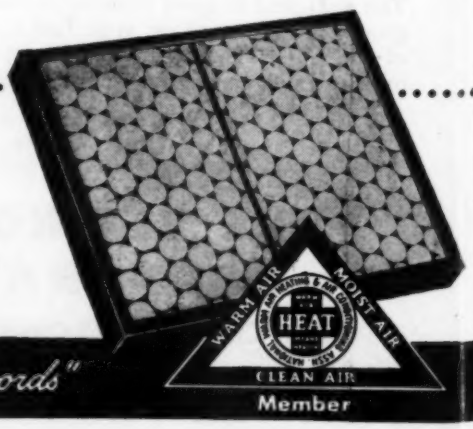
If you heat with coal . . . or coke . . . or gas . . . or oil, better have your heating system checked over before the cold weather sets in. Remember! Fuel may be scarce, *critically scarce* this winter, so take steps now to get all the heat possible from the fuel you use.

If you are one of the *lucky two million* homemakers who enjoy modern *mechanically-circulated warm-air* heat, you may need only to replace your air filters to put your system in A-1 shape. Today's finer warm-air heating (also known as Winter Air Conditioning) requires a minimum of attention, yet provides you with the ultimate in clean, thrifty heat.

By replacing dirt-clogged filters with new DUST-STOPS* you add to your comfort as well as save fuel. Clean, new DUST-STOPS—original equipment in most mechanically-circulating warm-air furnaces—permit the heated air to circulate freely. What's more, they protect your home and furnishings from harmful air-borne dirt. Why not phone your dealer and order a new set of DUST-STOPS today?

Owens-Corning Fiberglas Corporation, Department 2100, Toledo 1, Ohio. Branches in Principal Cities. *In Canada, Fiberglas Canada Ltd., 1200 Bay Street, Toronto, Ontario.*

DUSTOP
Air Filters
a FIBERGLAS product



* T. M. Reg. U. S. Pat. Off.

OWENS-CORNING

FIBERGLAS CORPORATION

"Your partner whose Actions speak louder than words"

Member

THESE ARE THE DAYS FOR PLANNING...AND *ACTION!*

THESE ARE THE DAYS when farsighted dealers—dealers who are in business to stay—are nailing down a franchise with Oil-O-Matic, the world's leading manufacturer of automatic oil-fired heating equipment. These dealers recognize that the worth of the franchise for years to come is even more important than any temporary gains or losses.

These are the days when Oil-O-Matic is helping its dealers size up their markets, sharpen their selling forces, with but one objective: to *brand* today's maverick market. To *brand* it with the name Oil-O-Matic . . . to *brand* it with the story of the Oil-O-Matic Low Pressure Principle . . . to *brand* it with consciousness of Oil-O-Matic "Engineering Against Engineering"—engineering that puts Oil-O-Matic *years* ahead of the field. And Oil-O-Matic dealers are doing this branding job with a host of new, dynamic, two-fisted selling aids geared to an *action* program.

And remember this—once Oil-O-Matic, which attained a wartime production rate of $20,000,000 a year, is permitted to really get rolling, every Oil-O-Matic dealer will get all the equipment he needs—and sooner than most believe possible.

WILLIAMS
OIL-O-MATIC
HEATING SYSTEMS

WILLIAMS OIL-O-MATIC DIVISION, Eureka Williams Corporation, BLOOMINGTON, ILLINOIS

One job sells another

Sure, the work piles up . . . fair-weather jobs like galvanized roofing and rain-spouting . . . warm-weather repairs and remodeling of furnaces and ductwork . . . air-conditioning installations . . . to say nothing of sheet-metal work for new houses and other buildings. More work than you like to think about!

But while you're up to your neck in the present, don't forget about the future. Remember, the job that pleases the customer of today is going to help bring in new customers tomorrow, when you may be glad to have them.

That's one advantage of using Bethlehem Galvanized Steel Sheets—the sheets with the bright attractive appearance and the zinc coating that won't flake in forming. With Bethlehem Galvanized Sheets, one job will really sell another. Ask your supplier for them—and if deliveries are temporarily tight, keep after him.

BETHLEHEM STEEL

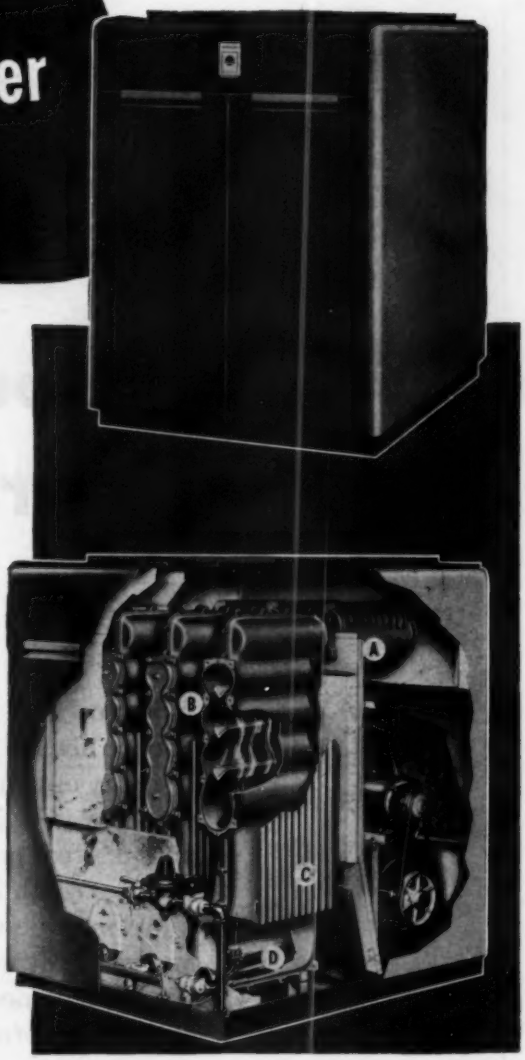
BETHLEHEM STEEL COMPANY, BETHLEHEM, PA

On the Pacific Coast Bethlehem products are sold by
Bethlehem Pacific Coast Steel Corporation

BETHLEHEM *Galvanized* SHEETS

☆ **SMALL HOMES** ☆ **MEDIUM-SIZED HOMES** ☆ **LARGE HOMES**

This Winter Air Conditioner is for ALL three!



It's the MOHAWK . . . from the famous Sunbeam line by American-Standard.

Made in various sizes . . . with capacities ranging from 60,000 to 300,000 Btu. input per hour, the moderately priced Mohawk puts completely automatic Gas Fired Winter Air Conditioning within the reach of practically *all* your customers.

And it bears the widely advertised American-Standard Mark of Merit—your customers' assurance of economical, efficient operation and long, dependable service. This Mark of Merit, along with superior construction features, makes the Mohawk easy to sell.

These selling features win customers

A. PRE-HEATED AIR. Prior to entering the Heating Element, the return air from rooms is drawn over these hot radiators. Thus the air is pre-heated *before* it enters the Heating Compartment—saving fuel, increasing efficiency.

B. RUGGED HEATING ELEMENT. Made in two sections of durable cast iron. The faces of both sections are precision ground and packed with asbestos wicking to form a leak-proof joint.

C. REDUCES HEAT LOSS. Corrugated Shield cuts heat loss into basement. Increases efficiency by providing extra heating surface. Placed between each Heating Element and on sides of end Elements.

D. EFFICIENCY BURNER. Made of cast iron with patented high temperature alloy, corrugated ribbons. Burns natural, manufactured, mixed or bottled gas uniformly, efficiently and sparingly. Quiet, dependable, durable.

SUNBEAM WARM AIR FURNACE

INCORPORATED in this smartly styled, square jacketed steel furnace are such fine construction advantages as heavy gauge boiler plate heating elements; large, massive radiators; full height fire-box; duplex grates and many other features. Made in four sizes—from 20 inch to 27 inch shell diameter and in models for coal (hand fired or stoker) or oil.

Your American-Standard Wholesale Distributor will give you further details of these popular Sunbeam units . . . as well as information on our convenient FHA Time Payment Plan which is available to your modernization customers. **American Radiator & Standard Sanitary Corporation,** P. O. Box 1226, Pittsburgh 30, Pennsylvania.

AMERICAN-Standard
HEATING PLUMBING
Serving the Nations' Health and Comfort

LOOK FOR THIS MARK OF MERIT—It identifies the world's largest line of Heating and Plumbing Products for every use . . . including Boilers, Warm Air Furnaces, Winter Air Conditioners, Water Heaters, for all fuels . . . Radiators, Convectors, Enclosures . . . Gas and Oil Burners . . . Heating Accessories . . . Bathtubs, Water Closets, Lavatories, Kitchen Sinks, Laundry Trays, Brass Trim . . . and specialized products for Hospitals, Hotels, Schools, Ships and Railroads.

Ryerson Ingenuity Provides Service

Despite Steel Shortage!

It is true that today many kinds and sizes of steel are not always immediately available and there will be many of your inquiries and orders we cannot handle. But your Ryerson salesman knows the ins and outs of steel procurement and it is surprising what can be accomplished by close cooperation between us.

We may be able to suggest an alternate type or analysis that will serve, or a larger size that can be cut or machined to meet your requirements. Flame cutting or forming, welding and other fabricating processes often enable us to come through and help you complete a needed product.

We believe the steel shortage may ease somewhat during the coming months. But in the meantime we want you to know that our whole organization is carrying on; doing everything within its power to help every customer secure the steel he needs. We urge you to keep in touch with us.

RYERSON STEEL

Joseph T. Ryerson & Son, Inc., Steel-Service Plants: Chicago, Milwaukee, Detroit, St. Louis, Cincinnati, Cleveland, Pittsburgh, Philadelphia, Buffalo, New York, Boston

Now is the Time to Study Your Profit Structure

WITH OPA price control abandoned for the time being, but with the possibility that some form of control may be reinstated, this is a good time for dealer-contractors to take a look at their operating costs with an eye to bringing profitless transactions into the profit column.

This will not be an easy task for the construction industry as it will be for the straight retailer. In the case of our industry, the law of contract estimating has never been wholly laid aside and in spite of pressing needs customers still do choose between bidders and decide whether the work is worth the cost.

Where the dealer-contractor can overhaul his pricing is in the flat charge services which OPA insisted we retain. OPA did permit us to increase selling prices by the increase (dollar-wise) in labor costs and material increases, but OPA did not permit us to increase our selling prices percentage-wise as labor and material prices crept upward. Now dealer-contractors may overhaul these selling prices and bring profit from service into line with all transactions.

It should be a good thing for every dealer-contractor to do this overhauling of his sales price structure in this interim period while we wait to see what will happen to OPA. Should OPA control be reinstated, it is likely that profits will be included. If we get our prices established now, we can operate under any new control on a price schedule which takes account of 1946 costs and not 1941 or 1942 costs.

In considering any new price schedule every dealer-contractor should keep in mind that construction costs are already beyond the range at which customers buy readily. News is trickling in of numerous jobs which are now "on shelf" because costs are too high. Not only large structures, but new small homes are being shelved because costs are above estimates or ability to pay.

This falling off in ready buying is also being felt in repair, maintenance and modernization work. It is no trick, now, to dig up cases where repair and modernization work has been laid aside because of too-high prices. Houses are not being painted because estimates run $400 and $500 and upward where the same job was bid at $200 and $250 a year or two ago. Electrical work is being postponed or is being done by the handy homeowner because prices are 50, 75 and 100 per cent above last estimates. New furnaces are being shelved except in cases of absolute necessity because prices are above the owner's idea of a fair price. Modernization of heating plants will likely be postponed if prices continue upwards.

There are two important factors working to increase this resistance to ready sales: (1) a widespread and growing feeling that there is going to be a "bust" with prices tumbling and (2) owners have not had time to digest and accept the new range in construction prices.

The feeling that there is a "bust" coming is not confined to laymen only. One outstanding Washington economist who has enjoyed an unusual record of correct guesses has expressed the feeling that prices will reach their peak in the summer of 1947 following which there will be a precipitate decline in business volume and prices which will continue until the middle of 1948. The climb back won't start until after the Presidential elections.

This is a short range opinion. The need for houses, stores, schools, factories, apartments, hotels, public buildings is so great that regardless of what happens in short swings the construction industry faces at least a decade of volume far above anything ever experienced.

The construction industry can make this decade a period of continued prosperity if every faction keeps a heavy hand on run-away prices. If prices skyrocket and collapse and if work exceeds supply of mechanics followed by mechanics out of work, the next ten years will be hectic indeed.

Right now restraint on prices is being exercised by manufacturers in our industry. There will be spotty adjustments, of course, but the feeling seems to be to wait and see what happens when the mass producers get under way. This industry has, as most readers know, many new manufacturers who came up during the war and are prepared to turn out equipment on a production line basis. And many of the old time firms are all set to apply wartime advancements to peacetime production.

So, for our industry, right now is a good time to study costs and profits and get ready to make a profit on every transaction, but it is also a time to apply caution and do nothing which may make an extra dollar today but lose $100 a year or two hence.

Systematize Your Sales

By Arthur Roberts

AFTER analyzing many sales control systems, we find that the most adaptable routine for warm air heating dealers embraces five forms. These forms cannot be purchased in the stationery store. They must be developed especially for the dealer, typed, mimeographed or multigraphed. Any expense or time spent on these forms will be a profitable investment. You can't do a good selling job without detailed recordings of selling operations any more than you can do a good costing job without cost sheets.

The forms described in these articles give maximum information with minimum clerical effort, also provide for easy and quick compilation of statistical data for sales analysis.

The Prospect Register (Form No. 1) is for listing all genuine prospects. This prevents loss of good leads and provides a central point from which the warm air dealer can make a periodical check on the success his salesmen are having with live leads. The Prospect Register also supplies valuable statistical information for the sales analysis chart, another form in this system.

In addition to the date, name and address of the prospect, the Prospect Register records the item of interest, whether an automatic job, air conditioning, hand-fired furnace, etc. Under the "Source" column, it tells where the salesman got the lead, from a cold canvass, user lead, phone canvass, direct-mail circularization, etc. The date when the lead is carded is placed in the appropriate column and this provides a check on lost cards or on cards that a salesman may "ditch" deliberately for one reason or another. At times, a salesman may hesitate to report that he cannot close a sale and dispose of a card, whereas, the lead, if given to another salesman, or contacted at a later date, may result in a sale. The Prospect Register insures the dealer against loss of live leads because it controls the leads and does not permit salesmen to do as they please with them. Much business has been lost because salesmen are given complete control of their leads. Efficient sales control invests this supervision in the management.

Prospects sold and cards "killed" are recorded on this form. Before a card can be "killed," the dealer or his salesmanager should consent to the "kill." No salesman should be permitted to "kill" or discard cards after they have been registered on this form. The fact that a lead is recorded indicates that it has good sales potentialities. Remember, that every person canvassed is not necessariiy a prospect for warm air heating or air conditioning, so all contractees are not registered, only live leads and the decision as to what is a live lead depends upon the information written on the salesman's Daily Report, another form in this system. Some organizations permit their salesmen to make this decision, others consign this authority only to the management, usually after conferring with salesmen anent their daily report. In some cases, the issue is clean-cut. For example, renters are not likely prospects for heating or air conditioning jobs, so, unless an unusual condition exists, they would not be registered.

Fig. 1. Prospect register 11 inches wide x 8½ inches long—keep in looseleaf binder.

PROSPECT REGISTER

Date	Name	Address	Interested in	Source	DATE Carded	Sold	Killed

Keep Files Accurate

Periodically, the management should check the prospect card file against the Prospect Register, to make sure that all listings are accurate. There is little use installing a sales control system unless you devote some time to it to assure accuracy and compliance with sound salesmanship.

The Prospect Card, form No. 2, shown here, should be filed according to the follow-up date, otherwise called a Tickler System. Many managements file their prospect cards alphabetically, but prospects are not contacted or followed up alphabetically, consequently, follow-ups are often not made on time because the cards do not come to attention systematically. The salesman either relies on his memory, makes notations on daily reports or in his personal note book. These methods foster errors and lose sales. It is mighty important to follow up prospects on time, just as it is essential to prompt collections to follow up past-due accounts on time. The Prospect Card, operated with a Tickler System, eliminates the hazard of follow-up negligence. The form shown here provides space for credit information, which gives the creditman an opportunity to investigate the prospect's credit risk in advance. Sometimes, because of a bad credit rating, a sale cannot be made, then much time has been wasted if this information is gathered after the sale is closed. By means of this form, time may be saved on bad risks. There are enough good credit risks desiring warm air heating and air conditioning to keep a salesman busy so do not waste time on bad risks. Now that the war is over, many individuals must take less money for their work. Dealers should not overlook this important fact and check credits more carefully than during the war years when many wage earners were making big money, hence, were better credit risks.

The Prospect Card also provides space to record the trade-in allowance demanded and offered, the nature of the competition and the reason for not closing. The dealer should look over these prospect cards at least weekly and suggest ways to overcome a prospect's objections if the salesman doesn't seem to be getting anywhere with his line. Often this type of sales direction will save a sale. Sometimes the prospect card can be turned over to another salesman with better results. Some salesmen are more adept than others at meeting certain objections or situations.

Give Salesmen Ammunition

Salesmanship is a complex operation, not a cut-and-dried procedure like insulating a furnace pipe, and today, a dealer, to get maximum results, must do a more scientific job of sales promotion than in days of old when a salesman was told to read a few leaflets explaining a proposition, given a few samples maybe, prices, told to bring home the bacon, and then let drift around the best he could.

The reverse side of this form (not shown) details the history of the case, in other words, the results of all follow-ups made until the sale is closed or the card is "killed."

PROSPECT CARD
(Card for each unit)

Follow-up Date		Hour
Interested in	Quoted	Source
Name	Address	Phone
Occupation	Number in Family	How many working?
Type Home	Own or Rent	Old Customer
Trade-in allowance demanded		Offered
Competition or prejudices		
Excuse for not closing		
Sale closed	Amount $	Cash down $

Fig. 2. Keep in small card file

Business authorities in all fields agree that salesmanship will be the Big Apple of the postwar period. Production must be sold as scientifically as production is produced if this country is to maintain maximum employment and keep free enterprise as our way of life. Whether you do your own selling or employ one or more salesmen, you cannot hope to do a topflight job of sales promotion unless you use a systematic method of sales control and this reasoning also applies to little business as well as big business.

These articles on sales control will help you get the most out of your efforts to sell warm air heating and air conditioning in this postwar period.

Don't Ignore Wage Records

SIXTY-NINE percent of the inspection cases closed by the Wage and Hour and Public Contracts Divisions of the U. S. Department of Labor during the first nine months of the current fiscal year showed violations of the record-keeping provisions of the Fair Labor Standards Act or the Public Contracts Act. Twenty-four percent of the violations were substantial in nature. One hundred twenty-one firms were found to have falsified their records. In a recent ruling by a referee appointed by the Supreme Court of New York in a case where neither the employer nor the employee kept records of the employee's hours of work, the employee who claimed, on the basis of recollection, that he had worked 28 to 30 hours overtime each week was awarded backwages for overtime for from 9 to 10 hours each week, for four years.

The record-keeping provisions of the Acts are relatively simple for most employers. Records must show, for each employee, his (1) name in full; (2) home address; (3) date of birth; (4) occupation in which employed; (5) day and hour on which workweek begins (where workweek for entire force begins on same day and hour, a single notation for whole work force will suffice); (6) basis on which wages are paid; (7) hours worked each workday and each workweek; (8) total daily or weekly straight time wages, exclusive of extra pay for overtime; (9) total wages paid for each pay period; and (10) date of payments and the pay periods covered by payments.

When covered employees work overtime, the records must show also (1) regular hourly rate of pay; and (2) total extra pay for overtime worked during the workweek. In instances where an employer makes additions to or deductions from wages due employees it is necessary for the employer to maintain records showing the basis for the credits or debits.

Arnold Kruckman's

Washington Letter

Watch For Drastic Changes in Housing Program

EVERYBODY knows that Congress gave Expediter Wyatt $400,000,000 to spend with building material people and equipment manufacturers to induce them to speed production. But relatively few, including people in the industry, seem to realize the significance of the other $400,000,000 cash which Congress handed to Wyatt at the beginning of the year to build housing for veterans as swiftly as possible. Bear in mind this other $400,000,000 is additional, and has been in Wyatt's official cash-box for almost six months. It was supplied to enable him to build housing for veterans of limited means, particularly those married men and women who found themselves without shelter at college and university towns.

The only specific apparent limitation placed on this cash seems to be that it must be spent as quickly as possible to bring into existence 200,000 dwelling units. In theory it is supposed to be used to remodel existing Government properties belonging to the Army and the Navy, or to tear down these Army and Navy buildings in order that the materials may be used to build veterans' homes. Actually, Wyatt may use the $400,000,000 cash to build housing for veterans anywhere, and he may buy materials and equipment from any source. The sole and only purpose of the $400,000,000 fund is to provide housing as quickly as possible for those who cannot pay much rent.

What Have We Received

What puzzles even Government people here in the Capital is why Wyatt has not produced more of these emergency rent dwelling units. Presumably the Army and Navy buildings and facilities made available under the Mead-Lanham Act can supply substantial quantities of materials. At the beginning of July the Federal Public Housing Administration was still discussing super-ratings with the Lumber and Building Materials Dealers Industry Advisory Committee, at which meeting the members of the Committee strenuously opposed temporary housing of this type. At the same time Wyatt himself got together with the, then, head of the War Assets Administration—they change so frequently it is necessary to check to find out if a new one has succeeded to the job overnight—and announced the dismantling job would be under way by August 1, and more dismantling could be expected by September 1, and October 1.

On July 2, Wyatt, in the dual role of Expediter, and Administrator of the National Housing Agency, made his first report to the Public, and in the press release he emphasized that he had *started* 69,000 temporary re-use dwellings, and 47,000 converted units. As you have learned through these columns, a *start* may mean anything from a building authorization to the actual breaking of ground, and usually means a building authorization. In reality, the part of the report that was not emphasized in the press release is the fact that only 16,000 of these temporary emergency re-use conversion jobs have been built. In other words, Wyatt still has enough of the $400,000,000 cash left, which Congress provided 6 months ago, to build 186,000 emergency housing units.

Why the Delay

The situation naturally raises a question as to why there has been much delay. The usual answers are that it takes time to organize; that labor is short; that materials are scarce; and in recent months it has been obviously difficult to induce contractors and others to undertake construction and production until the OPA muddle is settled. Here in Washington it is more generally assumed that the main reason for all delays is the growing awareness in Government that the great majority of veterans do not wish to buy dwellings, but wish to rent.

Figures of the Bureau of Census show that 72% of all families seek housing at a rental ranging from $20 to $40 per month. About 38% of these will pay from $20 to $40 per month, and 34% pay about $40 per month. Recent surveys show that at least half the veterans will not buy a home, and three out of five will not pay more than $40 rent. The growing conviction here is that well over one-half of all veterans will not invest in a home, and that substantially more than three-fifths will not pay over $40 for monthly rental. Commissioner Raymond M. Foley, of the Federal Housing Administration, recently made this statement: "It will not be enough that we produce and finance houses for sale. Many, and perhaps most young veterans, would prefer to rent for a period. Often they should be advised to do so. We need a large addition to our rental property in many, if not most, communities. It is safer and better, in the present building cost situation, that a veteran pay rent, even

somewhat higher than convenient, than that he should be bound for years to a debt too large for him, by a bargain made under the pressure of housing compulsion."

May Mean Public Housing

Mr. Foley is one of the subordinate heads of the group of housing agencies under Wyatt's general direction. It is reasonable to assume that he speaks with a knowledge of what Wyatt thinks. John B. Blandford, Jr., who preceded Wyatt as head of the National Housing Agency, is in the confidence of those who direct the trend of the Wyatt program. Very recently Blandford made this statement for publication: "There is need for continued Federal aid to provide low-rent public housing for families of limited income. . . . A public housing program in accordance with the policies of the National Housing Agency is strictly noncompetitive with private housing, and, in fact, will contribute to stability in over-all housing values. The policy is to limit public housing to those communities where minimum rents are at least 20% higher than can be paid by those who are entitled to the same type of adequate private housing available in the community."

Wyatt himself has recently pointed out that Title VI of the National Housing Act was restored to operation by authorizing the Federal Housing Administration to insure loans up to 90% to enable builders to construct multiple-family properties for rent. In every statement he has issued in July he has increasingly stressed the need for apartments to house veterans; and more multiple-family renting units, at lower rents. There are few officials in the National Housing Agency, and in Wyatt's immediate group, who do not earnestly point to the great multiple-family units under construction in New York City, financed by the large insurance companies, as one way of helping to solve the veterans' housing problem. The huge, moderate-rental, New York apartment undertakings, were made possible by special legislation provided by the State of New York. Wyatt and his associates point out that New York supplied an example which has been happily followed by 7 or 8 other States, and that such legislation, when nation-wide, will enable insurance organizations to embark upon similar projects everywhere.

Wagner-Ellender Taft Bill

This reasoning naturally leads them to intimate that the troubles stemming from price control uncertainties, material shortages, labor shortages, technical snags, local building regulations, union rules, architectural conflicts, red tape, and politics, could easily be licked by an over-all law such as is proposed in the Wagner-Ellender-Taft bill. There is little doubt in this reporter's mind that Wyatt and his immediate associates are very nearly licked by the innumerable unexpected contingencies that have arisen, from strikes to the removal of price controls.

At this writing the program in effect is paralyzed because no one knows what it may cost to build, nor what is ahead in the way of the secondary wave of strikes which are expected inevitably to follow rising prices. Wyatt knows as well as you do that home construction is bogged down, with huge numbers of structures everywhere standing incomplete for lack of many things and facilities. CPA itself has told him that a sample study of construction authorized in Birmingham, Denver, Detroit, New York and Pittsburgh, revealed the largest proportion of the construction work approved since March 26, will consist of remodeling, maintenance, and repairs.

If he knows what he may further do under the Act which gave him his authority, Wyatt has not yet revealed it to any one else. There are indications that he is imposing more and more controls, directly and through CPA. The regulations are making their appearance piecemeal. They cover single facilities, or specific materials; but they establish precedents, and weave a pattern. CPA, Wyatt, and the Federal Housing Administration, have made clear that they are exerting "downward pressures" on new home construction costs in fixing maximum mortgage ceilings, and in scheduling priorities, and channeling materials, into low and moderately priced rental and sales housing. A "dividing line" is set up in each FHA district or State office, and at least 50% of all permits to build under VHP No. 1 must be fixed at rental and sales prices below the "dividing line." Each district will be given a building quota, based on a national schedule. The national schedule, including the original 2,700,000 housing program, stems from the estimate made by the Bureau of the Census in its 1940 survey.

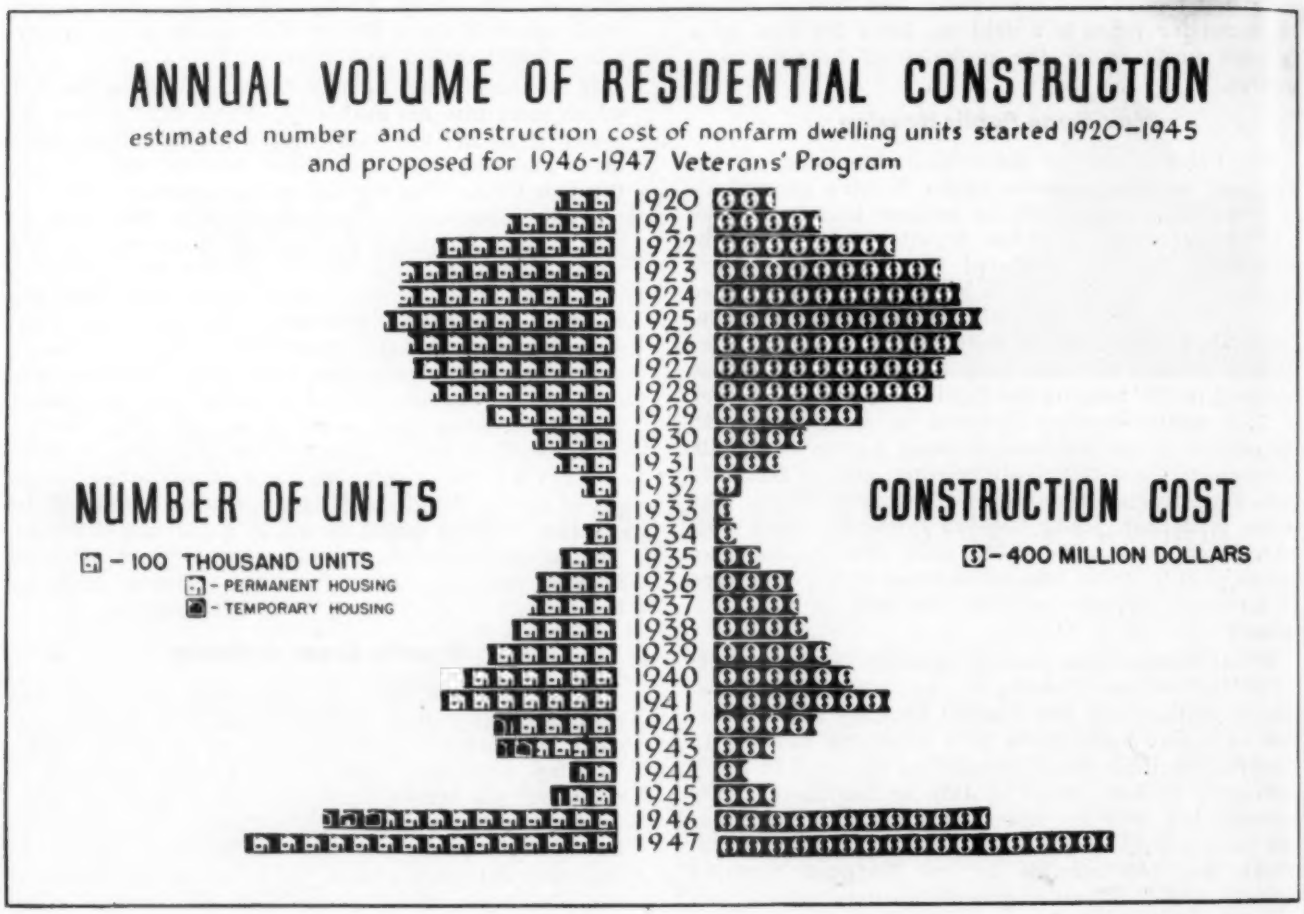
Wyatt's Great Authority

Wyatt has the right to requisition materials and equipment as well as facilities, but it is entirely unclear how far his authority may go in fixing prices. The law empowers him to direct other agencies to carry out his orders, including orders to OPA. Bear in mind OPA is still in existence, under Executive Order 9745, issued on June 30, the night before its statutory existence lapsed. OPA has all the powers it had previously, except price-fixing, and there is every reason to believe it will continue to exist no matter what Congress may do in stripping it to futility. There is an impression here that the terms of the law under which Wyatt operates, plus certain war powers of the Executive, may enable Wyatt to fix prices for building materials, equipment and facilities, either directly or indirectly. Moreover, whatever Wyatt may do may become the pattern that may be followed to impose controls in connection with other industries in a like situation.

Meanwhile, there appears small doubt in our minds here that Wyatt has been working quietly but vigorously to secure the passage of the Wagner-Ellender-Taft bill before the present session adjourns or recesses. At this writing it appears Congress may go home some time between July 27 and August 15. The date depends wholly upon what it does about bills such as the Wagner-Ellender-Taft bill. It is generally understood that Wyatt desperately wants this legislation because it will provide the power to spend public funds to build public housing in which to shelter the huge number of veterans who still have no prospects of homes. The bill has been reported out of Committee, which presages that it has a good chance to be passed in the last weeks' hectic rush to get back home to electioneer, and escape the hideous heat of humid Washington.

The Wyatt drive to get it on the floor, with a minimum of the press-agentry at which he is past master, is smart politics. It had been generally understood in Congress itself that the bill would not come up until next year. The enactment of the Wagner-Ellender-Taft bill logically means that a large number of huge multiple-family structures will be built

(*Continued on Page* 136)



Quick Picture of the Home Building Program

THE greatest home building program in the history of this country—an increase of over 350 per cent in a single year—is the goal of the Veterans' Emergency Housing Program for 1946.

This unprecedented increase is graphically illustrated by the above chart, which also shows the goal for 1947 to be a further increase of 70% over 1946.

These percentages reflect the adjusted dollar volume. In numbers, the program seeks the start of 950,000 permanent homes in contrast to the 240,000 homes built in 1945. In addition, the program provides for 200,000 temporary "reused" homes and 50,000 trailers —for a total of 1,200,000 homes to be started in 1946. The goal in 1947 is 1,500,000 permanent homes.

The greatest volume of residential construction in any previous year took place in 1925 when about 937,000 units were built. This volume was the culmination of a steady growth of the home construction industry over a five year period beginning in 1920 when approximately the same number of dwelling units were built as in 1945. The present program, therefore, undertakes to achieve in the year 1946 a volume of growth greater than that which occurred over the five-year period from 1920-1925, the period of the greatest expansion in American home-building industry.

This chart portrays only residential construction. The 1946-47 program calls for $23 billion of essential non-residential construction, maintenance and repairs in addition to the $10½ billion of home construction.

Schedule Now in Effect

To expedite this home program the NHA-CPA has issued a National Housing Agency General Order which apportions certain definite percentages of new housing construction into rental units and low-cost homes, making allowances for geographical differences in construction costs. The order determines maximum costs in each bracket through a "dividing line" technique which is based on local builders' construction estimates for the first quarter of this year.

Approximately one-third of the priorities issued through the FHA during the first quarter of 1946 were for homes costing $6,500 or less. The new order proposes to increase by 50 per cent the homes built under $6,500 in the second quarter.

The order establishes a housing target for each state or district office of the FHA and authorizes each FHA director to apportion local housing targets for each city or area he may designate for the second quarter of 1946.

The local housing target for each city or other area shall be broken down by the FHA director to provide that:

(a) At least 25 per cent of the dwelling units authorized shall be rental units. Of that percentage

(*Continued on Page* 132)

NEWS SUMMARY OF THE MONTH

Housing Inspection

EXISTING NHA regulations have been revised to require home builders to submit detailed plans and specifications in applying for priorities to secure materials and to provide for inspection of housing while under construction.

The new system of inspections will not affect the 509,289 new units authorized under HH priorities in the period from January 15 through May 24 or the 63,752 authorizations for conversion of existing dwellings into additional units. However, FHA through roving inspectors will make a spot check on construction underway on these authorizations.

Builders of veterans housing will be required to file with FHA state and district offices plans and specifications for the proposed structure instead of the rough floor plans and front elevation submitted previously.

The first inspection will be made when the dwelling is "roughed in," after framework, plumbing and wiring have been completed but before plastering. The second inspection will be made when the house is substantially completed. The two inspections will be similar to the second and third inspections made on houses which are FHA-insured but will be limited to compliance with plans and specifications.

In instances where the inspections disclose non-compliance with the original plans and specifications, builders will be allowed the opportunity to remedy the situation. If no action is taken, the case will be turned over to the compliance division, which has authority to withdraw further priority assistance and institute civil action to enjoin the builder from construction varying from specifications in his authorization.

◆

Steel Production

CURRENT production of two major construction materials—steel and metal building materials—continues critically low, according to the Construction Division, Department of Commerce.

Steel production, although still suffering from effects of the anthracite coal strike, is beginning to increase, and this increase will directly affect output in the metal building materials industries. May production of steel ingots, totaling 4,073,465 tons, was only 52 percent of capacity. Normal output cannot be resumed until depleted stock piles of raw materials are built up.

◆

Keep Your Price Records

MANUFACTURERS, wholesalers and retailers, and all other persons required under price control regulations to have kept records must preserve them until July 1, 1947, the Office of Price Administration has announced.

The action, Supplementary Order 167, effective as of June 30, 1946, was taken in order to enable OPA to carry on the powers and duties directed to it under Executive Order 9745 signed by President Truman on June 30, 1946, which authorized OPA to continue all the functions, powers and duties vested in it by the Emergency Price Control Act of 1942, as amended, and the Stabilization Act of 1942, as amended, which did not terminate by expiration of those acts on June 30, 1946.

◆

Scarce Products

THERE are 17 products for which preference ratings are issued by the Federal Housing Administration under regulation PR-33 of the Civilian Production Administration to aid the Veterans' Emergency Housing program. They are: common and face brick, concrete blocks, clay sewer pipe, bathtubs, structural clay tile, warm air furnaces, cast iron soil pipe and fittings, cast iron radiation, lumber, millwork, hardwood flooring, construction plywood interior and exterior types, prefabricated houses, prefabricated sections, prefabricated panels, gypsum board, and gypsum lath.

◆

VHP Pattern

RECENTLY sixty-five commercial and building projects costing $5,352,527 were approved by the Civilian Production Administration in the Chicago district. The CPA denied as unessential 35 other applications on buildings estimated to cost $3,630,887.

Under Veterans Housing Order No. 1, CPA passes on the essentiality of all proposed commercial and industrial building projects. Building applications denied included one for the erection of a plant to manufacture door bells; three to construct "fancy" store fronts; one for a plant to produce bottle tops, and one to construct an auto show room.

Construction approved by CPA included two exchange buildings for the Illinois Bell Telephone Co.; a freight truck terminal; expansion of a plant producing railroad car wheels; expansion of two plants manufacturing building hardware; two cheese and prepared milk manufacturing plants, and extensions to three schools.

◆

Pig Iron May Be Controlled

A PLAN to channel pig iron into the Veterans Housing Program, is under consideration by CPA. The plan for funnelling pig iron to these critical requirements is expected to follow generally the "certified purchase plan" applicable to steel, recently announced by issuance of Direction 12 to the steel preference Order M-21 (AA, June, 1946).

Upon determination of the foundries' requirements of pig iron for these preferred programs, the CPA will issue "a certified purchase authority" setting forth definite tonnages of pig iron which the manufacturers will receive in each given period for designated blast furnaces. The "must" programs will take about 25 per cent of the production of foundry and malleable

grades, most of which has already been ordered. Blast furnaces shipping malleable and foundry grades of pig iron will be expected to distribute equitably among their other customers that proportion which has not been "certified."

The proposed certified plan was established to apply to the following types of equipment: *Building Materials*: Cast iron soil pipe and fittings, cast iron low pressure boilers for residential heating, bath tubs, sinks, and lavatories, warm air furnaces and floor furnaces, water closet bowls, cast iron radiation and pressure pipe and fittings.

◆

Scarce Materials

PRODUCERS Council, Inc., claims that material shortages will not permit the construction of more than 425,000 privately built dwellings in 1946 unless the government encourages production. Its statement lists the scarce materials as mill work, enameled plumbing fixtures, heating equipment, and possibly cast iron soil pipe.

Available oak flooring is less than half of that provided in 1939; brick production, though increasing, is 63 per cent of what is required under the Wyatt Housing program; cast iron radiation is 30 per cent of what is needed; warm air furnaces 21 per cent and bathtubs, 42 per cent of current requirements.

◆

Labor Requirements

THE Bureau of Labor Statistics estimates that in September, expected to be the peak month for construction this year, 975,000 on-site workers will be required for the federally sponsored home building program and 900,000 for all other new construction. At the 1947 peak, 1,100,000 will be needed for the home building program and 1,500,000 for all other new construction.

◆

Gas Use Increases

GAINS in use of utility gas in the residential and commercial fields for the first quarter of 1946, more than offset the decline in industrial gas use caused by the sharp decrease in war production, the American Gas Association reports.

The total number of customers served by the gas industry increased during the quarter, aggregating 20,497,700 customers on March 31, 1946, a gain of 2.6 per cent over 19,976,900 customers a year earlier. Residential gas customers totaled 19,162,500, an increase of 2.4 per cent; commercial gas customers were 1,235,500, a gain of 5.9 per cent; and industrial gas customers totaled 85,700, an increase of 5.2 per cent over March 31, 1945.

Residential sales volume rose 9.5 per cent to total 371,934,500 MCF; commercial sales volume gained 6.4 per cent, amounting to 97,946,200 MCF, but these gains were insufficient to offset the drop in industrial sales from 354,909,600 MCF a year ago to 313,248,200 MCF in the first quarter of 1946, a decline of 11.7 per cent.

Customers of manufactured gas companies gained 1.9 per cent to a total of 8,807,500 on March 31, 1946. Sales of manufactured gas for the quarter were 123,630,900 MCF, an increase of 1.7 per cent. Mixed gas utility companies had 2,537,100 customers on March 31, 1946, a gain of 3.0 per cent. Sales in MCF of mixed gas amounted to 49,433,400, a gain of 6.2 per cent. Total natural gas customers were 9,153,100 on March 31, 1946, a gain of 3.2 per cent; but volume of sales of natural gas declined, principally in the industrial market, amounting to 638,354,700 MCF, compared with 661,981,700 MCF in the first quarter of 1945, a decline of 3.6 per cent.

◆

Federal Spending

DIRECTOR of the Budget Harold D. Smith is authority for a rough estimate of a possible expenditure total for fiscal 1947 of $39.5 billion, which is $3.6 billion above the January forecast. Simultaneously, he predicted a balanced budget for 1947, which would mean revenues of $39.5 billion, an increase of $8 billion over the budget estimate of $31.5 billion.

The chief item contributing to the prospective increase in expenditures over the budget estimate is that for national defense. Mr. Smith said that expenditures for the Army and the Navy and war liquidation might amount to as much as $18 billion, an increase of $3 billion over the $15 billion budget estimate. In fiscal 1938, national defense expenditures amounted to only $1 billion.

Other items making up the $39.5 billion total include:

Interest on the public debt, $5 billion; pensions and benefits for veterans, $5 billion; aids to agriculture and housing and refunds to taxpayers, $3.5 billion; international finance and social security, $4.5 billion; public works, $1.2 billion; and other government activities, $2.3 billion.

The veterans' item is $800 million above budget estimates; international finance and social security $691 million above; aids to agriculture and housing and refunds, $1.3 billion above; and public works, $207 million above. The item for other government activities represents a cut of exactly one-half in budget estimates.

Mr. Smith warned that the budget could be balanced in fiscal 1947 only if Congress resists pressure for enactment of various new spending proposals.

◆

No Tax Reductions

PROSPECTS for a reduction in individual and corporation taxes before 1948 are growing dim. There has been much talk in recent months about lower taxes next year, but not enough time remains for any tax legislation before Congress adjourns.

Reductions applying to 1947 would have to be effected by a tax bill passed next year after Congress returns. Such legislation consequently would have to be retroactive, a type to which Congress traditionally has been opposed.

Congressmen claim pressure for lower taxes is diminishing and that the public is more interested in keeping government revenues at high levels and trying to balance the budget. As a result, congressmen are losing interest in cutting taxes in time to make political capital for the November elections.

It is certain, however, that the administration will move to reduce taxes in advance of the 1948 Presidential contest.

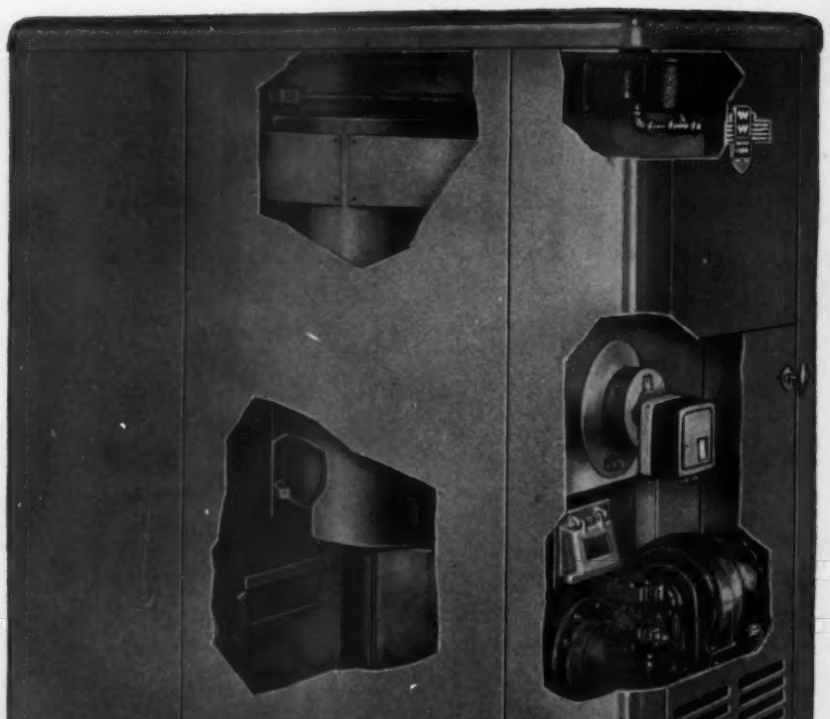
(*Continued on Page* 116)

RESIDENTIAL AIR CONDITIONING

DEVOTED TO HOME AND SMALL COMMERCIAL AIR CONDITIONING

Waterbury

Oil Fired Air Conditioner



It's What's Under The Casing That Counts !

Whether you are installing a simple gravity job or the most complete air conditioner, it's what's under the casing that counts for your customer's satisfaction—and for a trouble free sale for you.

The Waterbury Oil Fired Air Conditioner is a modern, compact, attractive unit, economical to buy—economical to operate. It is enclosed in an eye-appealing casing that is a compliment to the most modern basement—but what is equally important to you—because of the efficiency and quality of what is UNDER that casing, you are saved annoying service calls.

Furnaces for every size home and every type fuel—from gravity models to complete air conditioners.

For Service-Free Economy

THE WATERMAN-WATERBURY COMPANY

1122 Jackson St. N. E., Minneapolis, Minn.

Left—New, small, ranch-type Research Residence, typical of modern housing construction, to be started immediately at the University of Illinois' New Home Research Center. The familiar old residence (to be sold) is shown below.

On the Way— Our New Research Residence

THE passage of years and the change in building styles has just about brought an end to the usefulness of the present Research Residence at the University of Illinois. There can be no question but that it has served its purpose admirably well but it is an 11-room, 2½ story house and is decidedly not the size of house that is typical of present day construction.

In view of this change in building characteristics and also the great strides made in warm air heating (due largely to the old Research Residence) it was decided to lead off the building program of the University's New Home Research Center with a 5½ room house of up-to-date design for the study of warm-air heating.

The new Research Residence, like the old, is sponsored by the National Warm Air Heating and Air Conditioning Association and is the type of activity that has enabled the Association to keep a step ahead in the field of heating. In this project the University of Illinois supplies the skilled research men to conduct the necessary tests and the Association supplies the financial backing, the results of the experiments are then made available to all members of the Association for their common good.

Need For Residence

In order to make the tests under conditions that are the same as those in a house that is occupied, the new Residence (again, like the old) will be completely furnished and occupied. As a means toward compiling data from the tests in the house, four miles of wire will be built in, connecting more than 200 thermocouples with a central switchboard for determining temperatures at many points in the rooms, in and on the heating plant, and inside of the walls and other parts of the structure itself.

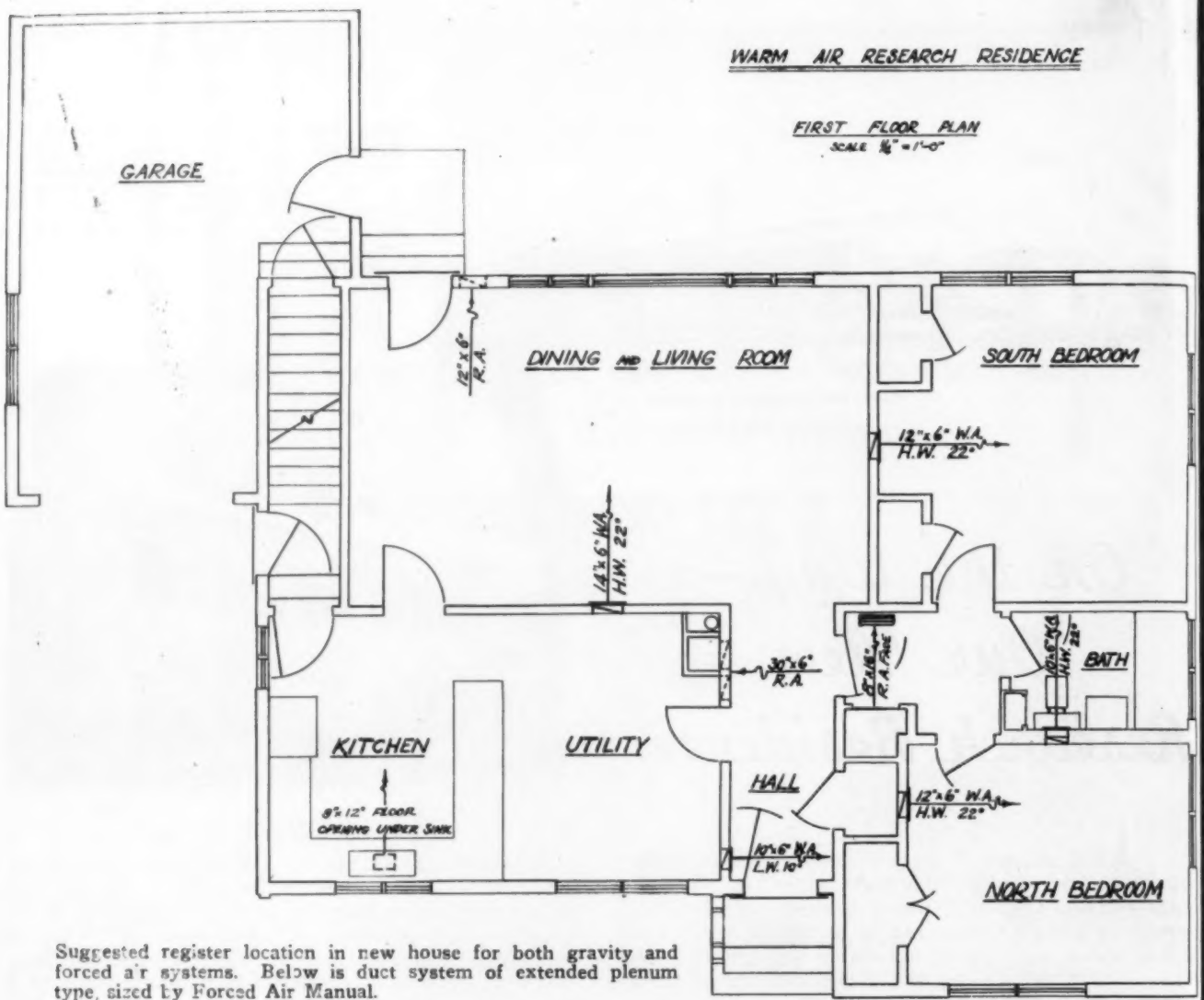
Robert W. Roose, Special Research Assistant at the University, has announced the subjects of research in the new house as: Improvement of heating plant operation and reduction of costs; study of air-transmitting duct layouts, heating plant layouts, and heat distribution under a controlled heat input; study of a house with a full basement compared with one having only a crawl space under the floor; study of summer home air conditioning; and study of new materials and ideas.

Use of Materials

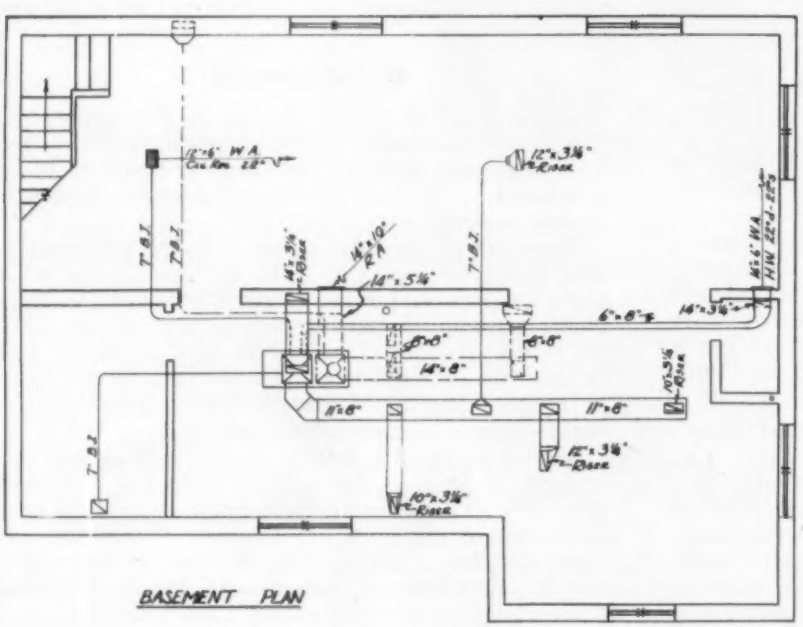
As an example of the use of new materials the chimney in the house is to be made of transite rather than brick and mortar. Also, another identical house is planned, to be built with the floor resting directly on the ground.

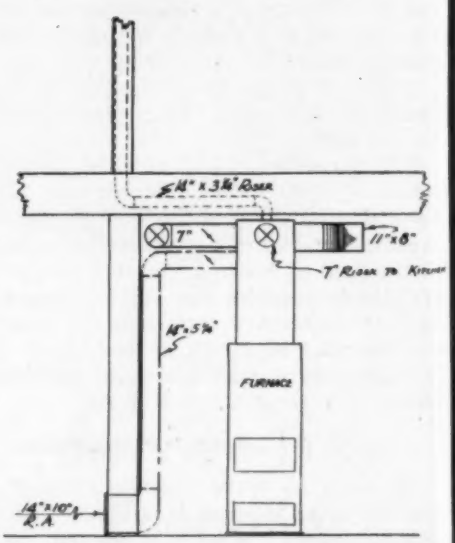
Basement of the new house is to be arranged so that it can be separated from the rest of the house and a heating plant placed in the utility room to study homes without basements, but having spaces under the floors. Also, steel joists will be used in the floor so that floor panel heating can be used. Walls are to be built of panels, instead of plaster, so ducts and equipment can be rearranged easily.

Accompanying this article you will find several layouts of the new Residence. One shows the first floor plan with a tentative register location that has been submitted to the Research Advisory Committee and since modified. However, the register system shown will be essentially a conventional system to enable comparisons to be made at the time nonconventional systems are studied. The basement plan shows the duct system for the registers on the first floor. This is an extended plenum system which has been designed to give a clean looking job and reduce costs at the same



Suggested register location in new house for both gravity and forced air systems. Below is duct system of extended plenum type, sized by Forced Air Manual.





WARM AIR RESEARCH RESIDENCE

SCALE ⅛"=1'-0"

time. It was laid out according to Forced Air Manual No. 7 with a certain amount of guess-work in the equivalent lengths of the branch take-offs.

Another illustration shows the two gravity systems that will be installed and studied for purposes of comparison with other gravity types and with forced-air jobs. The extended plenum system has been designed to give additional headroom in the basement by eliminating warm air leaders and to provide a simple duct system that would work satisfactorily. The design procedure in Gravity Warm Air Manual No. 5 will be checked against the results obtained in this rather unconventional system.

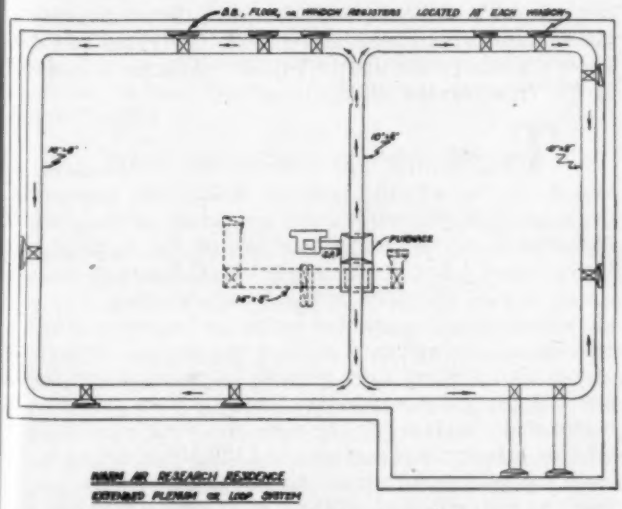
New Loop System

The last study that is scheduled at this time is that of an extended plenum loop system which incorporates baseboard, window or floor registers to be located at each window. This is a patented system, but the manufacturer holding the patents has authorized use and study of the system in the Research Residence. This same system can be used in floor panel studies with the warm air entering the panel at the edges of the structure and flowing back to the center, where it would drop down to the blower to be recirculated.

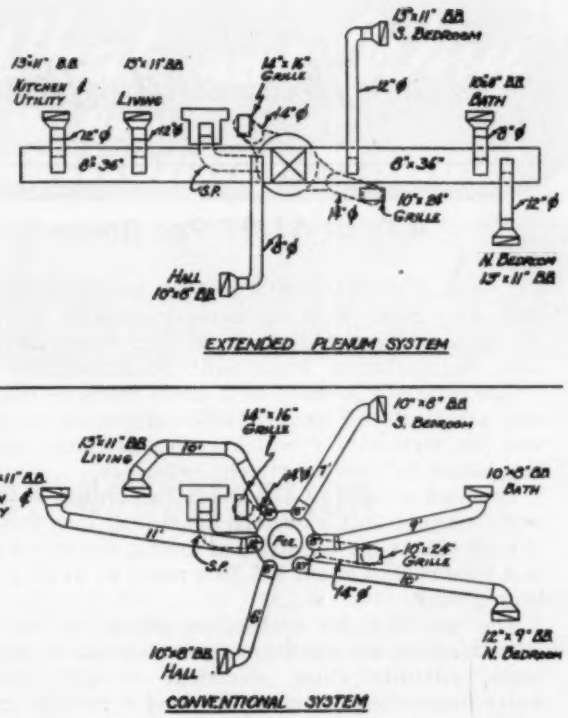
Some mention could also be made about the type of windows that are to be installed in the house. They will be horizontal sliding with fixed storm sash. On the rear of the house there will be considerable glass area which will be made up of a large sheet of Thermopane in conjunction with smaller side windows (fixed) of the built-in storm sash type. There will be a large overhanging eave at this location so that some studies can be made of solar heating. It is hoped that they will be able to reach some definite conclusions on the subject of solar heating; since there is, at present, so much confused evidence and so little really accurate information on the characteristics and efficiencies of this type of heating.

Value of Tests

A great number of the advancements made in warm air heating over the last twenty years have been directly due to tests made in the old Research Residence. This house was built to be representative of the homes of the middle twenties and it furnished many fundamental facts about furnaces, furnace installations,



Extended plenum "loop" system for forced air with supply main around basement (top takeoffs) and shortened return system.



Top—Extended plenum system with top takeoffs. Below—Conventional round pipe system. Both systems for gravity tests.

heating controls, insulation, storm windows and summer cooling. It showed that the construction of a house has a great deal of bearing on its heating and cooling characteristics. The part that storm sash and insulation play in cutting heat demands were demonstrated at an early date in the Residence. Also it was ascertained that tests of heating plants in the Residence gave different results than tests carried on in the laboratories and in this way it was possible to correct values which had been from 10 to 20 per cent off, previously.

Prof. S. Konzo, in charge of the project says, "The efficiency of a properly installed home heating plant today is known to be better than that of the most modern industrial plant. The homeowner gets more heat value out of his fuel than the manager of the best-engineered power plant." Even more important than the construction of the furnace is its installation, according to facts discovered in the Research Residence.

There has been no summer vacation for the Research Residence during its many years of service, for the summer time found tests being run to study home cooling and the many factors involved in the process. Again it has been determined that construction has much to do with the cooling of a house and insulation and awnings, or integral overhangs which replace awnings, greatly affect the heat-retaining tendencies of a house. Ventilating the attic is also an effective means toward summer cooling, since the entire attic (when at a high temperature) can act as a radiant panel, heating the house.

Construction is expected to begin shortly on the new Research Residence and it will mark an auspicious first step in the new program for the Home Research Center at the University of Illinois which will give it testing facilities second to none. And the part played by the National Warm Air Heating and Air Conditioning Association will be quite important.

This and That in Air Conditioning

A.C. at $1.27 Per Room

AIR-CONDITIONING can be included in postwar apartment building developments at a cost to the tenant of approximately $1.27 a month per room, says Refrigeration Equipment Manufacturers Assn.

The estimate is based on a study made by engineers and architects of modern air-conditioning equipment and the methods by which such equipment can best be utilized in new apartment buildings.

Detailed results of the study, according to the report, indicate that a modern apartment in a temperate climate can be air-conditioned during the warm season at a total cost of about $15.30 a room, or $1.27 a month over a year.

The cost includes a complete return on the initial investment in air-conditioning equipment in 20 years, taxes, administration, electrical energy, condenser water, operating labor, repairs and 6 percent interest on the unreturned investment.

The above figures, REMA officials said, indicate that air-conditioning is not a luxury beyond the reach of the person with an average income, but rather a basic comfort which can be provided at small additional cost to apartment dwellers. Apartment buildings without air-conditioning will become obsolete in 10 years, it is predicted.

◆

Liquid Fuel From Coal

A NEW laboratory and research unit, where the Bureau of Mines will conduct experiments in the production of gases required in the manufacture of synthetic liquid fuel from coal, will soon be established at the University of West Virginia. Under a cooperative agreement between the Bureau and the University, the latter will initiate a research program involving about $100,000 annually. The laboratories, which will be provided by the University, will be staffed by Bureau personnel consisting of 18 to 20 technologists.

This project forms an important part of the large scale five-year synthetic liquid fuels program authorized by the 78th Congress. Since the two processes in general use for converting coal or lignite to liquid fuels both involve the use of gases, the work at the University of West Virginia is expected to hold a key position in the future development of the Bureau's program.

◆

Oil Heat Increase

AT a meeting of officials of the Oil Heat Institute of America recently, it was predicted that 6,000,000 oil heating installations will be in operation at the end of the first five postwar years rather than 5,000,000 as generally expected earlier. The higher figure was arrived at, after taking into account the additional demand resulting from the veterans housing program.

The OHI estimates that at least 25 per cent of the new housing will favor automatic oil heating, and perhaps more. Fuel-oil industry representatives who attended the meeting stated that there is "no doubt that the oil industry can take care of the oil needed by the new housing requirements in the grades required in an entirely economical and satisfactory manner, and meets the demands from all other fuel-oil users."

◆

Gas Heating Problems

THE magazine Gas Age in its June issue has this to say on the problems of the gas utilities serving domestic heating customers:

"It's no secret that the American public, fed up with war shortages and strikes affecting raw fuels, is clamoring for automatic gas heat to the point of embarrassing many utility companies. Some have found it necessary to stop all new heating installations because their over-all service to other customers might be jeopardized; others are limiting new heating installations to new residences that have no other form of heating equipment available. Meanwhile, shortages continue in heating equipment, meters, valves, pipe and fittings, so that some heating installations already authorized may not be completed for months to come.

Also, a flood of relatively unknown but A.G.A. approved equipment, particularly conversion burners, is finding its way into the channels of distributor and dealer, while the gas company sits back without much, if any, stock. There is some question about much of this new equipment, although it has been tested and approved. The big problem is, 'Will it be easy or tough to service?' Gas companies have had enough experience with old-line burners, furnaces and boilers to know service costs thoroughly, but new lines are doubtful quantities. Serious students of gas heating for several years have been warning that this particular service cannot continue at existing rates and still show a profit to the utility, unless the latter is relieved of its 'free service' obligations."

THE natural gas industry has announced it expects to spend 161 million dollars on expansion. Quoting R. H. Hargrove, vice president of the United Gas Pipe Line Co., and Chairman of the Natural Gas Department of the American Gas Association, the group stated that the natural gas industry has embarked on a vast expansion program to prepare for extension of its markets in postwar years. Hargrove stated that the industry expects to spend about $160,898,000 for plant expansion, maintenance and inventories and supplies for the year commencing VE-Day. Of this amount, approximately $120,000,000 was to be used for additional plants and equipment. He added that the industry had already received approval of the Federal Power Commission for construction of nearly 5,000 miles of additional pipe lines.

The "How, What and Why" of the New Winter Air Conditioning Manual

BY
S. KONZO*

HOW TO USE IT
WHAT RESEARCH BACKS IT UP
WHY EVERYBODY SHOULD ADOPT IT

Trunk Duct and Bonnet Construction

IN the conventional gravity warm-air heating system, trunk ducts are not used, and individual leader pipes are run from the bonnet to the boot. In many forced-air systems, individual leader pipes are also run from the plenum chamber to the boot fitting. In some cases, the latter system is less expensive to install and is preferred because it gives individual damper control to each run. Why then should one use a trunk duct at all?

The conditions which determine the use of a trunk duct may be summarized as follows:

1) If it is not possible to have a sufficient number of individual pipe openings in the plenum chamber, without undue crowding or the use of a greatly expanded plenum chamber, a trunk duct should be used.

2) If appearance of the duct system in the basement is of importance, a trunk duct will often give a "cleaner" layout.

3) If the required runs are long, the use of individual pipes may require a greater weight of sheet metal than a trunk duct.

4) If the air supply to different zones in a building is to be manually or automatically dampered, a trunk duct will be more convenient for the user than individual pipes.

5) Since trunk ducts handle more air at the plenum chamber than individual pipes, they offer a better means of overcoming stratification of heated air in the plenum. Furthermore, a relatively smaller proportion of heat loss occurs from the duct to the surrounding air.

Trunk Ducts and Extended Plenums

In the method of sizing of trunk duct discussed in this article, the size of the duct is progressively increased *as the plenum chamber is approached,* so that the trunk and its branch ducts are somewhat similar in construction to that of an elm tree.

For example, in Fig. A., Case 1 illustrates one method of increasing the trunk duct in accordance with the procedure given in the Manual. In this example a 6 in. x 8 in. branch duct joins a 12 in. x 8 in. trunk duct. The Manual specifies that the width of the trunk duct must be increased by 4 inches in order to accommodate the 6 in. wide branch duct. Hence, the width of the trunk duct is only 12 inches plus 4 inches or 16 inches, instead of 18 inches.

Case 2 in Fig A shows another method of handling

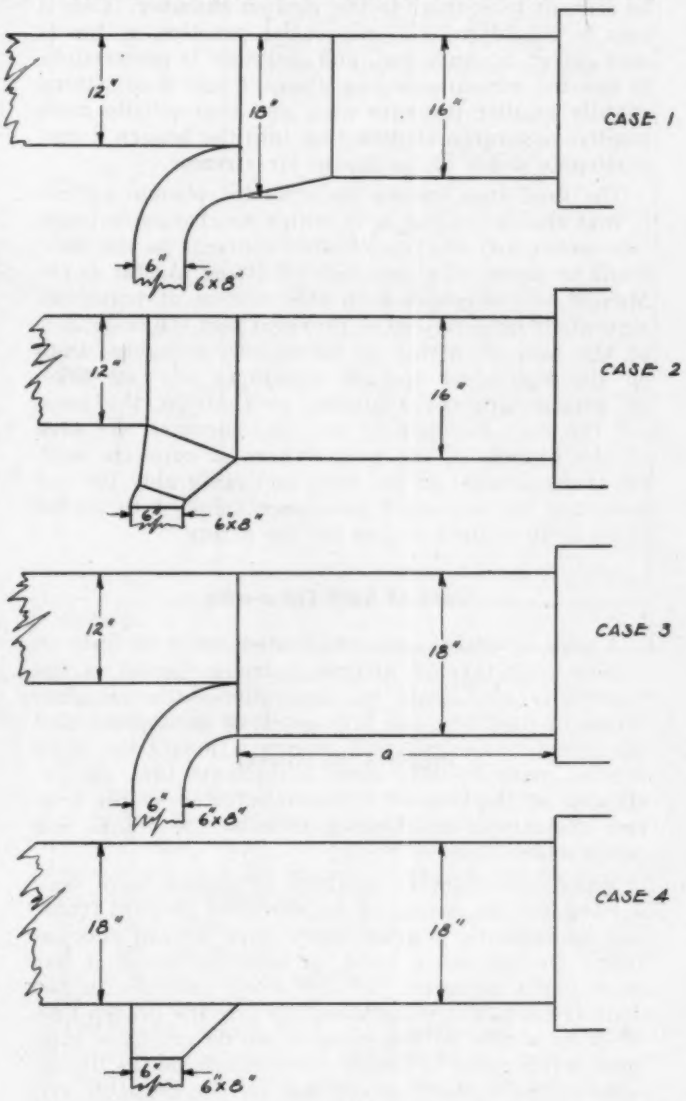


Fig. A—How mains are increased in size as branches are added (working back to the plenum). See text for good and bad construction.

**Special Research Professor, Engineering Experiment Station, University of Illinois.*

the same situation. The difference between the two cases is primarily in the take-off fitting. Both methods are permissible by the Manual method of installation, and both are commonly used. Those who prefer Case 1 state that a special take-off fitting can be avoided, whereas those who use Case 2 contend the installation looks neater.

Extended Plenum

The fact that the Manual specifies that the increase in width of the trunk duct is only 4 inches for a 6 in. x 8 in. branch duct does not, however, exclude the use of Case 3, in which the main trunk is enlarged to the full 18 inches. This is the first step toward an extended plenum design, and obviously uses more metal than either Cases 1 or 2, but requires less labor cost in making the transition piece. Case 3 can be used in those cases where the distance (a) between the junction and the plenum chamber is relatively short, or where a relatively small number of branches are taken off the main trunk. It will not be practical for a trunk having a great many branches, since the cumulative effect of oversizing the main trunk at each junction will soon make the width so great that it will be difficult to connect to the plenum chamber. Case 3 may be considered as conservative practice, as far as duct design is concerned, and certainly is permissible. It has the advantages over Cases 1 and 2 of having slightly smaller pressure drop and also a little more positive assurance of diverting into the branch a proportionate share of the warm air stream.

The final step toward an extended plenum system is that shown in Case 4, in which no change in trunk size occurs and the branch duct connects to the main trunk by means of a butt take-off fitting. As far as the Manual is concerned, even this system of trunk design would be permissible, provided that the resistance of the take-off fitting is taken into account. Data on the equivalent feet of resistance of butt take-off fittings are not available, so that for the present the only recourse is to: (a) increase the area of the branch at the point where it connects with the trunk at least 50 per cent, and preferably 100 per cent, and (b) assume a resistance value of the order of 25 to 40 equivalent feet for the fitting.

Tests of Butt Take-offs

A very extensive and complicated series of tests on various butt take-off fittings is being started at the University of Illinois in cooperation with manufacturers of prefabricated fittings. It is anticipated that the complete analysis will require a long time, since studies made to date seem to indicate that the resistance of the take-off fitting is affected by the relative amounts of air floating through the branch and trunk ducts.

Many rule-of-thumb methods of design have been derived for the sizing of an extended plenum trunk, and undoubtedly a great many have worked successfully. On the other hand, in some instances it has been found necessary to use scoop dampers in the main trunk to divert sufficient air into the branch line. In other words, at the moment we do not have sufficient information to enable us to determine the limitations of the system, except that all the available evidence seems to point to the importance of enlarging the take-off opening. In view of this dearth of reliable data it is the writer's opinion that extended plenums should be used only in installations requiring relatively short trunk ducts, say about 20 feet or less. The sizing of the branch ducts can be made in strict accordance with the Manual.

Plenum Chamber Design

As far as the Manual is concerned, the installer has a wide range of designs of plenum chambers to work with provided that he takes into account the resistance of the bonnet take-off connection. Fig. B, for example, illustrates some of the constructions possible. In spite of the fact that complete data on all types of bonnet connections are not available, nevertheless experience of manufacturers and observations of air temperatures and air velocities at the top outlet of the furnace casing indicate that some designs are liable to cause trouble. A few notes concerning the examples shown in Fig. B are in order:

Case 1.—This construction is the poorest of those shown and is not recommended. The pressure loss is high. Little mixing of air occurs and hence the air temperatures entering the different ducts are not equal. The appearance is not satisfactory.

Air Flow Plenums 2 to 8

Case 2.—This is better than Case 1. The plenum chamber gives space for mixing of the air streams leaving the top outlet of the casing. Measurements of air velocity at the outlet show that in some furnaces the velocities may vary as much as 50 per cent from one point to the next. Furthermore, some furnaces show variations of from 60 to 80 deg. in air temperature from front to back, primarily because the air from the blower by passes the heating surfaces. Tests in the Laboratory at Illinois have shown that a plenum chamber is essential. In general, dimensions (a) and (b) of the top outlet of the casing should be large, although if the furnace is poorly baffled, even a large plenum chamber will not provide uniform air temperatures. In all cases an air space is required between the top of the plenum and the adjacent wood joists. The use of an insulating board on top of the plenum is good practice. If the total resistance of the ducts is high, an appreciable improvement can be made by using a collar at the bonnet take-off that is larger than the pipe to which it is connected.

Case 3.—The resistance at the bonnet take-off is slightly less than that in Case 2, primarily because the rough edges and projections inside of the pipe at the joint connection, cut off relatively more of the pipe area in Case 2 than in Case 3.

Case 4.—This arrangement probably provides the least resistance, and is particularly recommended for large installations and for cases in which a large number of branch ducts are being served by one trunk duct.

Case 5.—Occasionally, the situation arises where both a trunk duct and flat stack ducts are taken off the same bonnet. Our experience with this combination has not been very satisfactory. The entrance losses for the 3¼ in. depth ducts (a and b) are usually high since even a ¼-inch reduction in the depth of the duct will reduce the capacity about 8 per cent. Furthermore, where duct (a) is placed over duct (b) it has been found that duct (b) will frequently be robbed of its share of air.

Case 6.—Where the top opening of the casing is

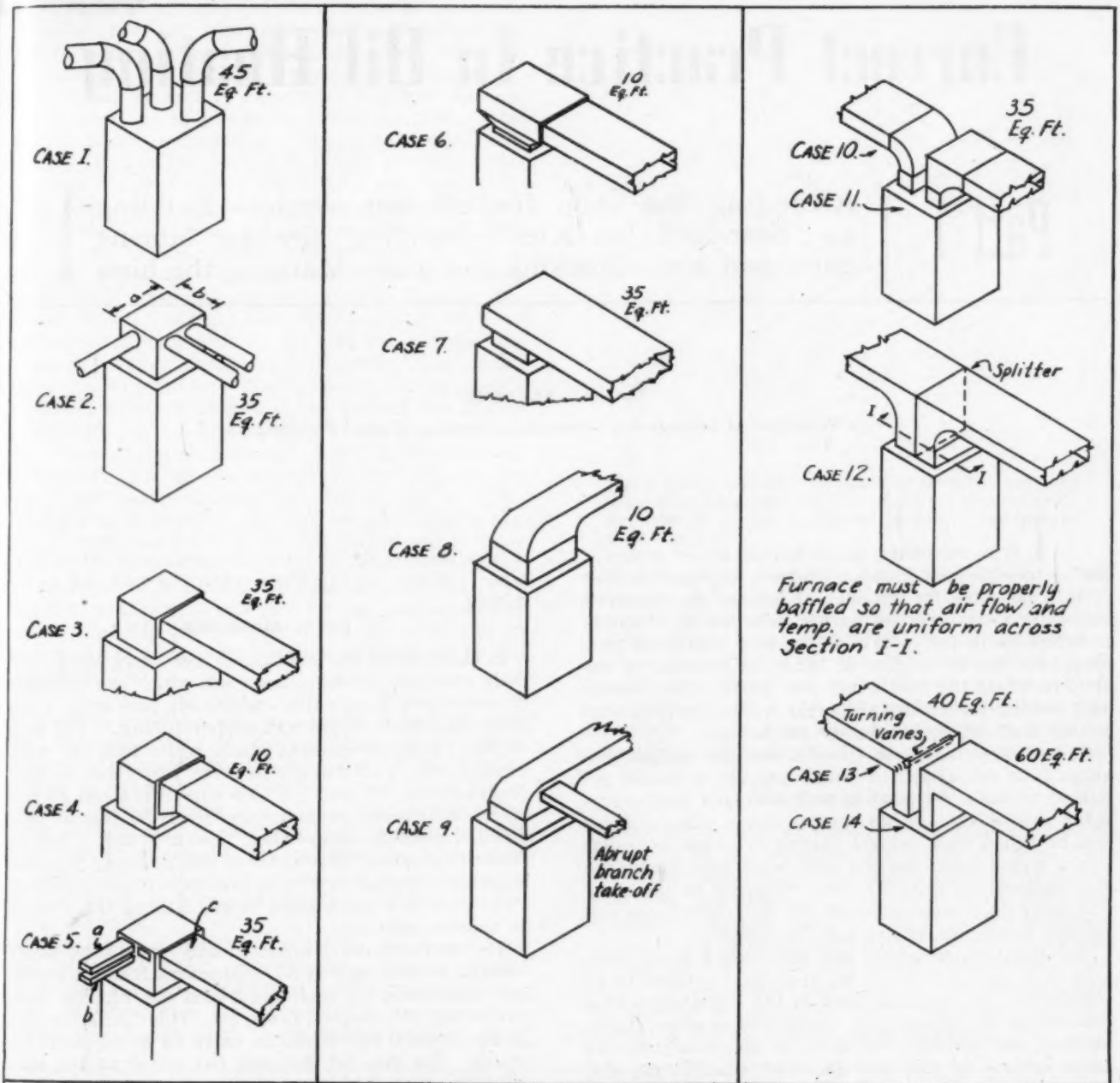


Fig. B. Types of Plenum Chambers

Fig. B—Arranged above are various types of plenums which have been tested at the university or in the field. Some show excellent air handling characteristics with low loss and others show high resistance or uneven air temperatures in the pipes.

small, an expanded plenum can be successfully used.

Case 7.—This construction is simple and is a modified form of Case 6. It does have a higher resistance.

Case 8.—This construction was used in one of the Research Residence installations and was found to be highly satisfactory from all standpoints.

Case 9.—This case is somewhat similar to Case 5. The high resistance at the inlet to the branch duct combined with the fact that the air stream must be diverted 90 degrees into the branch, has often resulted in a disappointingly small air flow into the branch duct.

Cases 10 *to* 14.—These cases will not be as satisfactory as a plenum chamber construction unless the furnace is properly baffled so that both air flow and temperature are uniform across the top outlet of the casing.

Return Air Plenum

In general, the foregoing comments apply equally well to the plenum chambers used on the return side of the system. Any one of the arrangements shown can be made to work, but the choice of any particular type should be based on:

a) Clean lines
b) Low resistance
c) Low installation cost, and
d) Good mixing space.

The figures shown near each illustration are approximate resistance values of the bonnet and trunk take-off collections, and are in units of "equivalent feet." Many of the figures are estimates, and may be modified at a later date when more data becomes available. In general, those constructions having low values of resistance are preferred.

Correct Practice In Oil Heating

Part I [Arranging the shop for efficient service—Building up "Standard Job Kits"—Building bins for storing parts and kits—Stocking the bins—Marking the bins.]

By J. J. Mirabile

Vice President of Engineering—Harold E. Sweeney Corp., Philadelphia

To be successful an oil burner dealer makes it his business to have his shop properly arranged so that it is a pleasure for his men to gather the material necessary to make an oil burner installation. There is a difference in the morale of the men who work in a shop that has everything in order, in contrast to the shop in which the men climb over pipes, tanks, boxes, etc., looking for fittings or parts. An untidy shop plus untidy methods equals untidy mechanics.

It is not necessary to spend a fortune equipping a shop; it is surprising the small amount of money required to make the shop so well arranged that everything can be kept in harmonious order. Cheerfulness can be added with several gallons of paint or ready-mixed water color, and the men, with your assistance and suggestions will, with you, be proud of the shop. The extra floor space obtained through orderliness will become invaluable as business increases.

To operate successfully and eliminate a lot of running back and forth from job to shop, it is essential to standardize the material used in the installation of a conversion oil burner. All installations, when standardized, are basically the same, so approximately the same amount of pipe fittings, electrical fittings, etc., are required on every job. The major variations are in the length of pipe, copper tubing, or BX wire, caused by the fact that the tank and meter are located at various distances from the furnace in every home. It is seldom that extra material will be required; if the installation requires a long vent and fill pipe, the installation foreman can take care of this by seeing that it is written on the installation order, so that the extra pipe is placed on the truck when the material is delivered.

Extra Materials

In many shops the installation men carry along with their tools the following materials which are variables on every job: Tank paint, cutting oil, pipe dope, 1 roll of ⅜ inch O.D. —.049 wall copper tubing, 1 roll each of No. 14 rubber-covered black, white and red wire, 1 roll of No. 18-3 thermostat wire, and 1 roll each of No. 14-2 wire BX and No. 14-3 wire BX, about 25 feet of No. 8 armored ground wire, about 20 feet of non-metallic conduit (also called "Loom") and 1 roll of smoke pipe wire. This material will do many jobs and when the material is getting low, the crew can pick up a new roll or a short piece before leaving the shop to go to their next job.

The men also carry a partitioned "junk box" which contains several each of BX connectors, BX ells, solderless connectors, 1¼ inch and 2 inch ells, nipples, thermostat and BX staples, fuses, etc. This "junk" is used in the unusual job where an extra ell or nipple is required. The men fill the junk box either at the shop or on the next job, where the same items may not be required, but were delivered with the kit.

Standard Kits

The material required for a "standard" kit is divided into three portions: (1) tank & fittings; (2) electrical; (3) combustion chamber material. The in-

Editor's Note

This is the first of a series of articles by J. J. Mirabile—the articles will cover many subjects important to the established warm air heating dealer who now expects to enlarge his oil heating work and important to the new men coming into oil heating and warm air heating. The articles will present all essential data for a first class, satisfactory oil heating installation.

stallation order contains the list of material sent with the installation kit. Six gallon cans with covers are used to carry portland cement, sand and asbestos. The cans may be obtained from various sources, i.e. empty 100-lb refractory cans, used 6-gallon paint or varnish cans, or they may be purchased new. Your company name, or the name of the oil burner you sell, can be painted on the can and its cover. Every installation crew requires three 6-gallon cans and covers.

The above material can be collected and assembled for delivery to the job in ten to fifteen minutes if your shop is well arranged with bins as shown in Fig. 2 used only for oil burner installation work. These bins can be built; there should be plenty of light in the area of the bins and the bins should be kept filled, so that every time you walk by the bins you will see how the material is holding out. If items are short, a depleted bin will indicate that a reorder or restock is necessary. Instruct the men to use the material in this oil burner department for oil burner installation work only. When ordering material, multiply each item by the number required on one job, by five jobs, or ten jobs, or 100 jobs, depending on sales volume.

Time will be saved if the bins are arranged in the same sequence as listed in the installation order. Then paint on the face of each bin the name of the item the bin contains. The amount of material required from each bin to make up a standard kit can also be painted on each bin. The use of three colors is a good idea to take the guess work away from the man making up the installation kit.

Use one color, say green lettering, to indicate that the material in that bin is included in all standard job kits. The quantity to be removed from the bin can be lettered in orange color. If the name of the item is painted in red it indicates that the item in the bin is not used in a standard kit, but is used in all forced warm air jobs. The quantity required is again painted below the red lettering in the orange color. If the item in a green-lettered bin is not used in a forced warm air job a red zero can be painted alongside of the orange numeral.

Example: On a forced warm air job we need a two-pole, plug-type safety switch instead of a toggle switch and cover, being part of a standard kit, is lettered in green and the numeral (1) in orange is painted under each item. A red zero is painted along

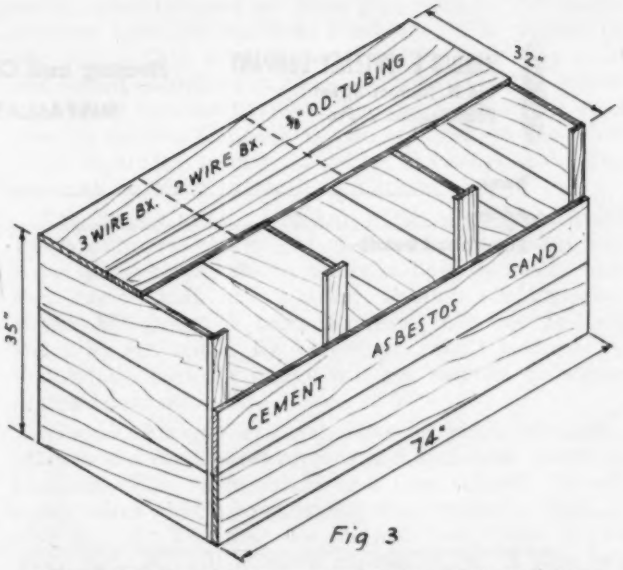


Fig. 3—Bulk materials can best be stored in bins like this. Such bins keep the floor clean and show visually the supplies on hand. Materials like tubing can be stored on top.

side each orange numeral (the orange numeral one under the cover and the orange numeral one under the switch, indicates the quantity). This indicates that the toggle switch and cover are not put into the kit on a forced warm air job, if we are collecting all items lettered green and red with orange numerals of a standard kit. If a red numeral is placed along side an orange numeral we use only the red numeral in determining the amount of material to remove from the bin.

Bin Arrangement

Good, sturdy bins as shown in Fig. 2 do a good job of keeping all the material together in one spot. The bins are of one cubic foot capacity except where two cubic feet are necessary. The four lower rows are designed to keep all the material in proper sequence and each bin is large enough for a shop having approximately 15 to 30 conversion installations per week. The upper row and top shelf are for parts and the storage of controls, draft regulators, furnace cement, pipe dope, cutting oil, tank gauges, etc.

DRAFT REGULATORS	AIRSTATS	MOTORS		NOZZLES	FAN & FURNACE CONTROL	OIL PUMPS	PUMP COUPLING	STRAIN. ELECTRIC.	FAN		MISC. BUR. PART
CONDULET TEES 2	COND. COVERS	SWITCH-COVER	3" BOX COVER	BX. CONN 8-10	BX. 90° CONN.	DUPLEX CONN.	GRNFLD CONN.	GRNFLD 90° CON.	½" LOCKNUT	L-BUSHING	½" PIPE STOPART
RD. STRAPS	SOLDERLESS CON.	THERM. STAPLES	FUSES	3" & 4" x 5" BOXES,	FUSE BLOCKS	BX. STAPLES	CAPOLETS,	½" FIBRE BUSH	2-POLE SW-;	AXT, SHORTS	SCREWS
TANK	GAUGES	¼" x 6" NIP	¼" FLANGE	½" x ⅜" ELL	½" x 3" NIP	⅜" x 3" NIP	⅜" VALVE	2" ELL	2" x 45° ELL	2" x 6" NIP	2" x 4" NIP	2" SHD. NIP	
⅛" PLUG	2" x 1⅜" Bush.	⅛" ELL	¼" x 45° ELL	¼" x 6" NIP	¼" x 4" NIP	¼" x SHD. NIP	OIL LINE FILTER	COMB. FILL & VENT BOX	PIPE HOOKS	TUBING CONN.			

Fig. 2—Suggested arrangement of easily-built bins for parts and kits. Colored lettering is used (as explained in the text) to show at a glance what parts and how many pieces of each part go in different kits. Bins are arranged in sequence for rapid assembly of job materials.

HAROLD E. SWEENEY COMPANY
114 N. Juniper Street
Philadelphia 7, Pa.

Heating and Cooling Equipment

INSTALLATION ORDER **JOB NO.**

Name | Installation Promised
Address | Deliver | Gals. of Oil
Furnish and Install:—

Surveyed By:	Burner Ser. No.	MATERIAL	LABOR
Estimated By:	Boiler Ser. No.		
Installed By:	Controls:		
Completed			

AMOUNT Out	In	Used	DESCRIPTION	COST	AMOUNT Out	In	Used	DESCRIPTION	COST	AMOUNT Out	In	Used	DESCRIPTION	COST
			Gal. Tank					T-Cond. & Cover					¼" IP x ⅜" Ell	
			Tank Gauge					T. Cont. Switch & Cover					⅜" IP x ⅜" Tube Conn.	
			1¼" x 6" Nipp.					3" Box and Cover					O. D. Tubing	
			1¼" Flanges					Bx Connectors					Sq.-D Switch	
			½" x ⅜" Ell					Bx Connectors 90°					Red Brick	
			½" x 3" Nip.					Duplex Bx Connector					Fire Brick	
			⅜" x 3" Nip.					14-2BX					Split Brick	
			⅜" Anti-Hum Valve					14-3BX					lbs. Holdfast	
			Ells					½" Greenfield					lbs. Cement	
			45° Ells					Greenfield Con.					lbs. Sand	
			x 6" Nipp.					Greenfield Con. 90°					lbs. Asbestos	
			x 4" Nipp.					½" Conduit					lbs. Furnace Cement	
			x Shd. Nipp.					½" Lock Nuts & Bush.					Bags Backfill	
			Plug					½" Pipe Clamp					C. C. No. Gal.	
			x Bushings					Grd. Clamps					Extra Pieces	
			x Bushings					Solderless Conn.					" Draft Control	
			Ells					No. 14 Red Wire		C.C.	" x	"	" C.L.	
			45° Ells					No. 14 Black Wire			Nozzle			
			x 6" Nip.					No. 14 White Wire		Expenses				
			x 4" Nip.					2-Wire Thermostat Wire		Location Vent				
			x Shd. Nip.					3-Wire Thermostat Wire		Location Therm.				
			Pipe					Thermostat Staples		Type System				
			Pipe					10 Amp. Fuses		Electric Permit				
			Filter					3 x 4 x 5 Box and Cutout		Remarks:				
			Fill Cap					BX-Staples						
			Vent Cap					JCP-Caplet						
			Reznor Hooks					End Bushing						
			TOTAL											

This installation order used by the author's company is two pages long—the back-up continues the list of parts and materials used. As described in the text, this order shows items required; items taken out of stock; and items returned. Thus each order is a complete job record.

The number of bins in Fig. 2 is the minimum number necessary to do the job. If desired electrical material can be kept in a separate bin following the same color scheme. The upper part of the bins can be used to store oil burner parts, etc., or oil burner parts can be kept in a separate bin. The bin layout shown in Fig. 2 is approximately 14 feet 6 inches long, 14 feet deep and 5 feet 6 inches high. The assembly can be placed along a wall which has the necessary length to accommodate the bins.

This bin system, if followed, will prevent errors in the delivery of too much of some material and not enough of other material. It insures that workmen will not have to run back and forth for material they forget to pick up. There are times in a very unusual job when a fitting, etc., will be required, but such can be picked up at a nearby hardware store or the shop contacted for it. We find that this happens about every fifty to fifty-five installations.

Pipe Rack and Bulk Bins

Conduit fill and vent pipe can be placed in wall racks or pipe racks. In selecting the location of the pipe rack, consider removing pipe from the rack with comparative ease. Sand, cement and asbestos can best be kept in three bins, the size of each bin depending on the available floor space or on the minimum amount of sand or cement the supplier will deliver. The bins shown in Fig. 3 are constructed of 12 x 1¼-inch rough boards.

The over-all dimensions as shown are 36 inches high, 32 inches deep, and 74 inches wide. This will permit partitioning the bin into three sections of 24 x 30 x 35 inches high. This will keep the floor clear of sand, cement and asbestos. The top of the bin can be used to store wire and copper tubing.

The standard kit can include a pre-cast combustion chamber, "Zonolite" insulation, one can of asbestos cement, one can of sand, one-half can of portland cement, also split bricks and red bricks. The bricks and combustion chambers can be stored neatly near the oil tanks; since all these items are heavier and are usually kept near the loading platform. Asbestos board can also be located in this area and placed with the kit if the survey form indicates that board is necessary. If the survey calls for smoke pipe it is also placed with the combustion chamber material.

Stocking the Bins

With the bins built the next job is to purchase the correct material—we don't want three or four different types of electrical fittings, etc.; we are not going to spend a lot of money buying a lot of different things which may not be applicable to this work.

The material listed below is material our firm uses in our standard kit. We do not say this is the only kit, but if you follow it, you are assured that it is approved and has been used for years in oil burner work. For instance, there are several types of conduit switches, but one inexpensive conduit switch will permit sufficient room for all the wires necessary behind the switch without crowding or squeezing the insulation. After doing four or five jobs a contractor may be able to improve this list.

The material listed in the first column of the Installation Order (Fig. 1)—275 *Gallon Oil Tank*—should have four 2-inch tapings across the top of the tank and one ½-inch outlet opening in the bottom of the end of the tank. The tank should also have angle iron welded flanges, tapped 1¼-inch pipe legs. (The material order is based on these pipe sizes.) The underwriters' label, or any local label, should be welded on the tank. This label states that the tank was built and tested according to the specifications of the underwriters or local authorities. The thickness of the steel used in making the tank is also stamped on the label. Some localities specify 12-gauge thickness, etc. Buy the tank required by local regulations.

The Tank Gauge. Use any nationally-known make which indicates the height of the oil in quarters, etc. Some gauges indicate in gallons. This, however, can keep the oil man in hot water, because the customer thinks his gauge is more accurate than the fuel oil meter on the truck. He, sometimes, can't be made to understand that the gauge will not respond to bulges in the tank, etc.

Nipples, Flanges and Ells. Use all black, malleable fittings and black steel nipples and standard, cast-iron bushings. The valve should be a type suitable for oil, some valves have a composition disc which is not suitable for oil. You may use an Anti-hum valve if you wish, this is a little more expensive but it also has the advantage of being a check valve.

Pipe. Use black steel pipe, not galvanized pipe for oil lines.

Filter. There are many good filters on the market, one with a renewable cartridge is best. Select one which gives you the most filtering area per dollar; remember that is must be easy to service.

Fill and Vent Cap. If you are not permitted to use a combination fill and vent box in your locality, purchase a 2-inch fill cap with a non-ferrous screw-type cap. A leather gasket must be the means of seating the cap into the sleeve and a cross-shaped key is used to remove the cap.

The 1¼-inch vent head must be galvanized and equipped with a wire screen to exclude insects, etc. In the kit you add one 1¼-inch, one ear pipe clamp when you do not use the combination fill and vent box.

Reznor Hooks. The 1¼ x 8-inch Reznor hooks will meet almost all conditions for fastening fill and vent pipes to the joists where the tank is away from the point of filling or venting.

¼ IP x ⅜-inch O.D. Ell and the ⅜ IP x ⅜-inch O.D. ell tubing connector, can be of the flare or compression type. If your mechanics prefer and can make a good flare then use the flare type fittings. Before ordering be sure that you have a ¼-inch tapping on your pump inlet. The ⅜-inch IP end of the fitting is screwed into the filter outlet.

⅜-inch O.D.—.049 Wall Tubing will be large enough for all normal oil burner work. If not available use 5/16-inch tubing. If you use 5/16-inch tubing then you must order 5/16-inch O.D. copper tube fittings instead of the ⅜-inch O.D. fittings.

Square D Switch. On fan furnace units use a two-pole plug-type safety switch. Place a jumper across the line side of the switch to start two circuits, one for the oil burner and one for the fan.

Red Brick. Any red brick can be used, in fact, rejects from the kiln are O.K.

Split Bricks. Use No. 1 grade 3200° brick.

Portland Cement. Any good cement.

Sand. Use coarse sand.

Asbestos. Standard dry asbestos.

Furnace Cement. Any good asbestos fibre, black furnace cement.

Back Fill. Use expanded mica called "Vermiculite," "Zonolite," etc.

(*Continued on Page* 130)

1 —For complete combustion, each volume of fuel requires from 11 volumes of air for gas to 13,000 volumes of air for coal or oil plus excess air. Unless these volumes of air are provided, combustion is incomplete and fuel costs are excessive.

2 —In burning any fuel, the fuel and air must be intimately mixed so that the combustible will contact oxygen. This is easy to obtain in burning gas; is readily supplied by the fan in an oil burner or in a stoker; but lump coal burned on a grate must have air passages and air movement through the fuel bed. About 165 cu. ft. of air is needed to burn one pound of coal so air must get into the basement.

3 —The volume and weight of air for combustion or gas of combustion must be continuously removed from the furnace if combustion is to continue. To get this flow there must be "draft" through the furnace. To get "draft" the products of combustion must be lighter than and separated from the outside air—hence the need for a chimney.

4 —Since chimneys provide and control draft; chimneys must be built right—high enough, smooth enough, large enough, tight enough, insulated enough. Given a good chimney, there should be more than enough draft—so some form of draft control is necessary and the control should be adjusted for the fuel, the furnace and the chimney.

IT HAS been shown that a relatively large weight and volume of air is required for combustion. The products of combustion are in the form of a gas equal in weight to the weight of the air supplied plus the weight of the fuel actually burned. The volume is substantially the same as that of the air supplied when measured at the same temperature. This gas must be discharged from the furnace continuously if flow of heat is to be maintained. In addition, some air gets into the gas stream through leakage into the furnace setting and smoke-pipes and air entering through the cold air check if one is used. The volume of the gas at any point in the furnace is proportional to its absolute temperature and is, therefore, greatest in the firebox. As the heat is absorbed by the heating surfaces, the temperature drops and the gas contracts in volume. For Illinois coal, the volume of the gas in the firebox is more than five times the volume of the air supplied, but when it is cooled to 500° at the outlet of the furnace the volume is reduced to a little less than twice the initial air volume. To move the air through the fuel bed and the gas through the furnace or boiler passes and breeching and out through the stack at a point high enough above the ground that it will not create a nuisance, requires power. For every ton of coal the fireman shovels into the firebox, from 12 to 20 tons of gas must be discharged through the stack.

The power to lift this relatively large weight and volume of gas comes from the heat in the gas leaving the furnace or boiler. In an average coal installation the gas leaves the outlet at a temperature of 500° to 600° or more. In large boiler units additional heat may be taken from the waste gas by the use of economizers or air preheaters and a higher evaporation per pound of fuel obtained. The gas leaves the economizer or preheater at a lower temperature than it entered. A part of this additional steam produced from the coal may be used for power to operate an induced draft fan to move the waste gas, and part is a net gain.

In smaller plants this method is not practicable. However, a part of the heat energy in the waste gas can be, and is used, to create the draft required to move the gas through the system, by means of what we call, for want of a better name, a natural draft stack. The amount of power a stack will develop depends principally on the temperature of the gas at the furnace or boiler outlet. It would be impractical to

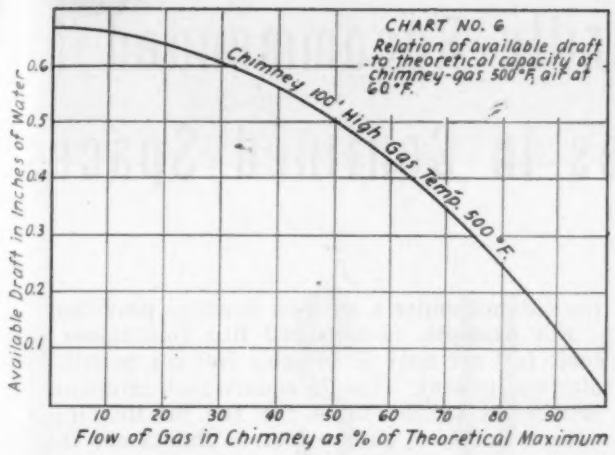


CHART NO. 6
Relation of available draft to theoretical capacity of chimney-gas 500°F, air at 60°F.
Chimney 100' High Gas Temp. 500°F.
Available Draft in Inches of Water
0.6
0.5
0.4
0.3
0.2
0.1
10 20 30 40 50 60 70 80 90
Flow of Gas in Chimney as % of Theoretical Maximum

design, or operate, a small furnace to reduce the temperature of the gas to a temperature approaching that of the inlet air.

Natural Draft

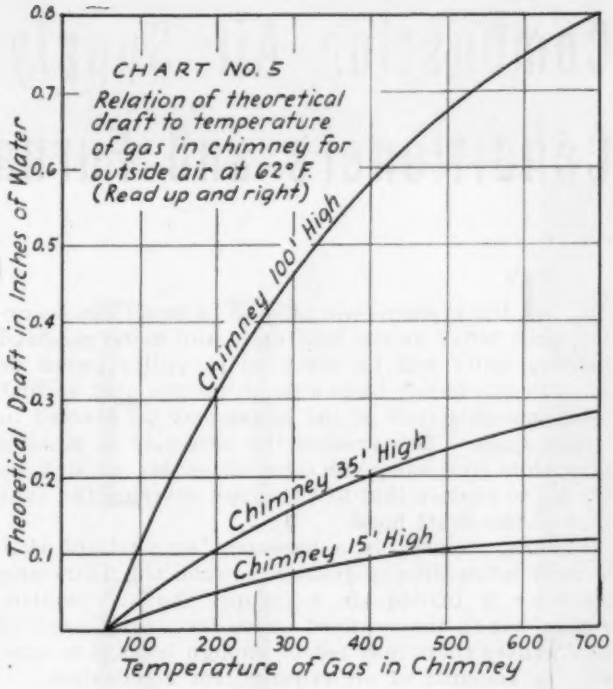
Power to cause the flow of gas through a natural draft stack is produced by the difference in weight between the column of hot gas in the stack and a column of equal height of outside air. The higher the stack and the greater the difference in temperature, the greater the difference in total weight and, therefore, the greater the draft. Draft, as indicated by a draft gage, is usually measured in inches of water column. A column of water one inch in height is equal in weight to a column of air 68.3 ft. high, measured at 62°. The weight of gas in a chimney 136 ft. high measured at 500° is equal to the weight of air in a column 68 ft. high at 62°. Therefore, if the gas in the stack is at 500° and the outside air at 62°, the theoretical draft is equal to one inch of water column, at sea level.

Static Draft

The draft gage reading would only be a measure of the difference in weight of the columns of gas and air if the stack was filled with gas at that temperature and no gas was flowing. This is known as static or theoretical draft and in practice is never observed with a draft gage. As soon as gas flows there is a loss of draft because power is required to overcome the inertia of the gas and frictional resistance on the lining of the chimney.

Available Draft

The draft available to do useful work is the difference between the static, or theoretical draft and the amount lost in the chimney proper. The available draft, measured at the level in the stack at which the breeching or smoke pipe enters, must be sufficient to overcome the resistance to the passage of the air through the fuel bed and of the gases through the furnace or boiler passes and breeching and the frictional resistance in the stack. This resistance will be least when the system is so proportioned that the gas will travel at a uniform velocity through passages with smooth surfaces and the fewest possible changes of direction. Smooth surfaces in breechings, with turns made as gradual as possible, are necessary



for minimum draft loss. Changes in cross sectional area, whether increasing or decreasing area, increase draft loss because they cause changes in gas velocity.

The static, or theoretical, draft varies with the height of the stack and the difference between the temperatures of the gas flowing in the stack, and the outside air. In Chart No. 5, the theoretical drafts are plotted for three chimneys, one 100 ft. high, which may be taken to represent a small industrial plant, one 35 ft. high, the minimum height recommended by the National Fire Underwriters, and one 15 ft. high as might be found in a small bungalow. The curves showing theoretical draft indicates why a cold chimney has a poor draft and the increase in draft as the temperature in the chimney increases.

Capacity of Stack

For a chimney of any given height and temperature of flue gas the draft loss due to frictional resistance increases as the square of the weight of the gases flowing. The maximum practical capacity of the stack is reached when the available draft, that is, the theoretical draft less the draft loss in the stack, is just enough to overcome the draft loss through the fuel bed, the furnace and the breeching or smoke-pipe. The available draft in relation to flow as a percentage of the theoretical capacity of the chimney is shown in Chart No. 6. As the amount of gas flowing increases the available intensity decreases until it becomes zero at maximum flow, at which point the loss due to friction is equal to the theoretical intensity. In actual operation, the maximum flow is reached when the sum of the draft losses in the fuel bed, furnace, breeching and chimney equal the theoretical or static draft. This indicates why it is necessary to keep fires and furnace clean and to avoid leaks in the setting, smoke pipe and chimney when the furnace or boiler is being operated to produce all possible heat. Also why unfavorable weather conditions may seriously reduce the capacity of the plant.

Combustion Air Supply Grille Recommended For Conditioners and Furnaces In Confined Spaces*

THE predominate number of small houses being built today means that more and more gas-fired heating units will be installed in utility rooms or even closets barely large enough for the unit, so that every possible inch of the house may be devoted to living space. This creates the necessity of making provisions for adequate combustion air as well as for air to replace that lost through entering the vent pipe at the draft hood.

Seldom, if ever, is a basement so air-tight that normal infiltration or leakage around the doors and windows is inadequate to supply the air requirements, but in the confined space frequently used in new houses there may not be enough leakage to supply the amounts of air required for combustion.

Serious complaints can and do arise from inadequate air supply, so measures are recommended here to overcome that condition. Obviously, poor combustion will result from the shortage of combustion air. Also, units tend to carbon up, burners will light back at the orifice and ignite gas in the mixer because of floating flame. Pilots will intermittently make contact when the burner is on because the flame on the pilot, due to lack of air, is not of the proper character to adequately heat the expansion element. There are other possible troubles caused by insufficient air.

Since there is no sure way of determining the exact amount of area needed for providing the correct amount of air under the wide range of possible conditions, the best way to handle the situation appears to be to provide air generously to care for the most adverse conditions. A table of recommendations for the minimum free area of an air supply grille for gas-fired units installed in utility rooms and closets is offered:

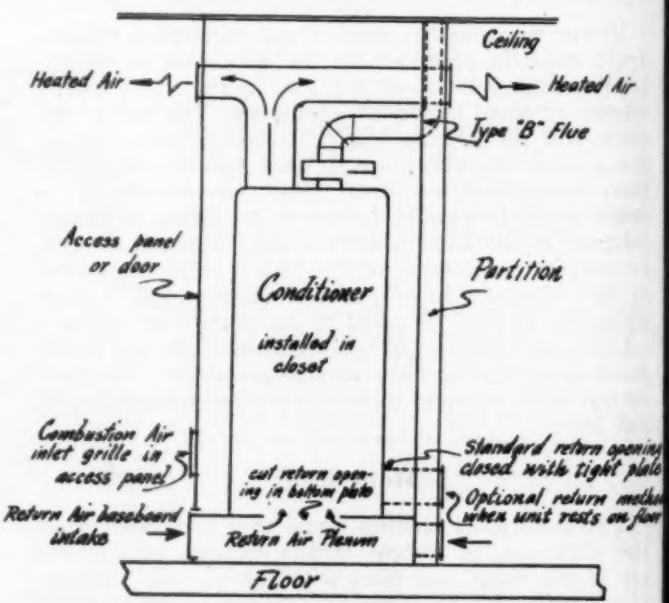
Free Area of Air Supply Grille

Hourly Btu Input	Minimum Free Area, Sq. In.
60,000	75
90,000	75
120,000	100
150,000	125
180,000	150
240,000	175

The above table was computed on the basis that 1000 Btu in the form of gas requires approximately 15 cubic feet of air, considering the normal amount of excess air. Then, a draft diverter usually will pick up from the room in which it is located, about one cubic foot of air for every cubic foot of products of combustion produced by the furnace. Therefore, adding these two together, for every 1000 Btu per hour input into the furnace there are approximately 30 cubic feet of products of combustion being removed by the chimney. This means that an air supply area capable of supplying this air without placing the cabinet under a vacuum must be provided.

For example, in a 90,000 Btu conditioner, 2700 cubic feet per hour or 45 cubic feet per minute is the air requirement. The 75 square inch minimum recommended in the table for the 90 Btu input is approximately ½ square foot, so this means that the velocity through this grille will be approximately 90 feet per minute. If the velocity were much higher, the enclosure would be under a slight vacuum, which is undesirable.

In making the installation, the air opening should be at or near the floor level, because if it is near the ceiling of the room there will be a tendency for the warm air in the room to rise and go out through the opening. Such a counter draft through the combustion air inlet grille would interfere with the proper admission of air to the heater.



It is emphasized that the combustion air supply grille is for combustion air only. When conditioners are installed in confined spaces, the return air must be carried through a closed duct in the closet space to the conditioner so that all return air will be drawn entirely from outside the confined space. Under no conditions should the return circulating air be drawn from inside a confined conditioner room.

This need for combustion air is not peculiar to the burning of gas. A similar need for air exists for the combustion of all other fuels. However, since modern gas furnaces and boilers are exceptionally compact and require no adjacent space for fuel storage, the room or closet in which they are installed is often made smaller than the area for other types of heating equipment. That is why attention must be given to the necessity of having a sufficient opening into the small gas heating equipment space for the easy access of air for combustion.

*By the Janitrol Engineering Department of Surface Combustion Corporation, Toledo, Ohio.

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F-271E

Bell and Bennington *Specialize in* Heavy Industrial Work

William Bell and E. D. Bennington, co-owners, Industrial Sheet Metal Company.

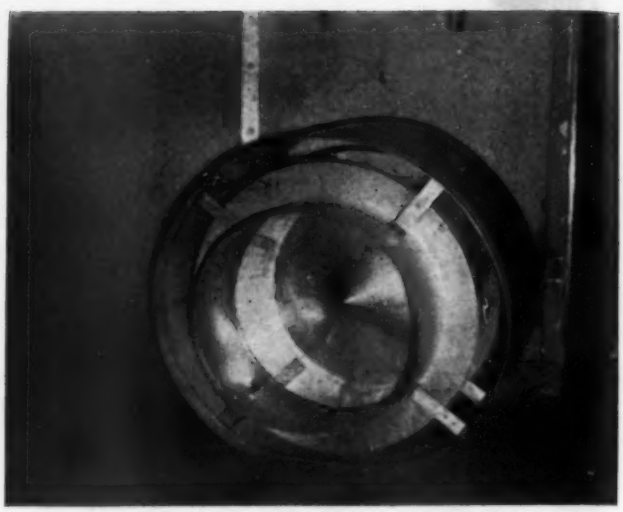
IN 1934, William Bell and E. D. Bennington founded, in leased space and with rented equipment, the Industrial Sheet Metal Co., Inc., today these contractors own their own building and machinery and employ two dozen skilled mechanics, plus several apprentices (all veteran returnees). Located in Hammond, Indiana, their shop is in the very center of the many major industries in the region which includes Gary, Hammond, East Chicago, Hegewisch, Calumet City and Whiting. There is such a complexity of work, products and producers in this area that, some time ago, Industrial Sheet Metal decided that it would be best to concentrate their main field of activity into heavy gauge, industrial installations and to lean toward work which lends itself to shop fabrication rather than outside contracting for they feel that it is in this type of work that they can make the best profit. Industrial sometimes does warm air heating installations but they have always shied away from roofing work and its related jobs.

It is a basic aim of this organization to equip the shop in the best possible manner so that work can be done with the highest efficiency and least loss of motion and time. As an example of this, they were having difficulty getting delivery on rolled and formed angles for their work, at one time during the war, so they purchased a machine that would cut, roll or form angles; when, later on, it became apparent that other shops in the area were running into the same situation, Industrial offered to furnish angle formations for those who needed them. Thus, their display of foresight was followed by an example of their spirit of friendly cooperation.

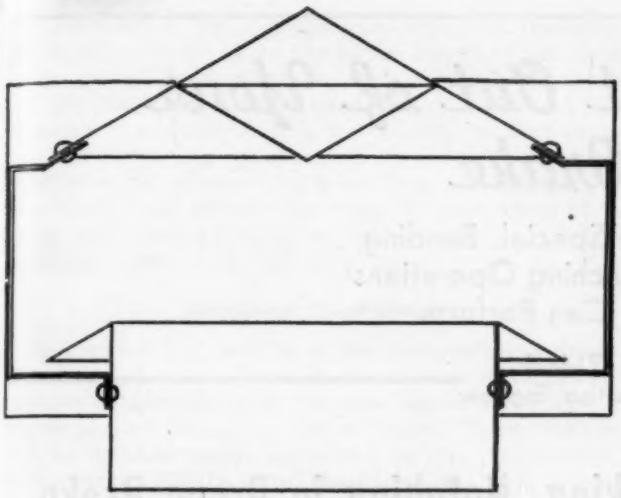
Nature of Work

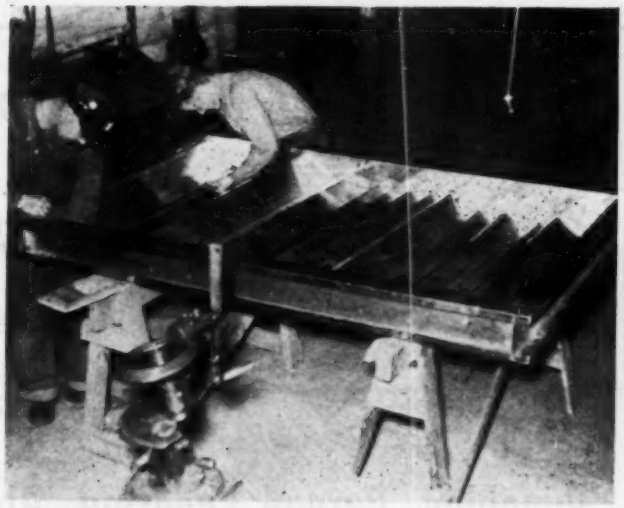
The type of individual work this firm does requires the use of all types of material: galvanized iron, copper, stainless steel and aluminum alloys. Many of the products that they have taken contracts for lately, have called for stainless steel, since it has been readily available in the past few months. Typical of the stainless steel jobs one of the largest contracts that they have secured called for twenty-seven stainless steel exhaust hoods that were being made for a local manufacturer. In this plant there are twenty-seven huge processing vats, eighteen feet in diameter and several stories in height. These vats boil the raw materials that are being produced. At one stage

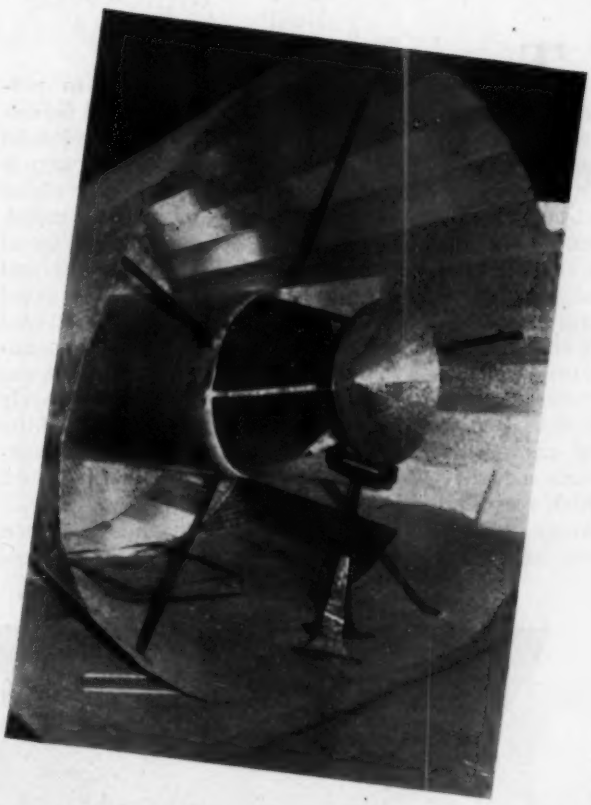
Left: Six-sided base-cupola supply. Center: Transition piece-six sides to round. Below: Rain cap (inverted).

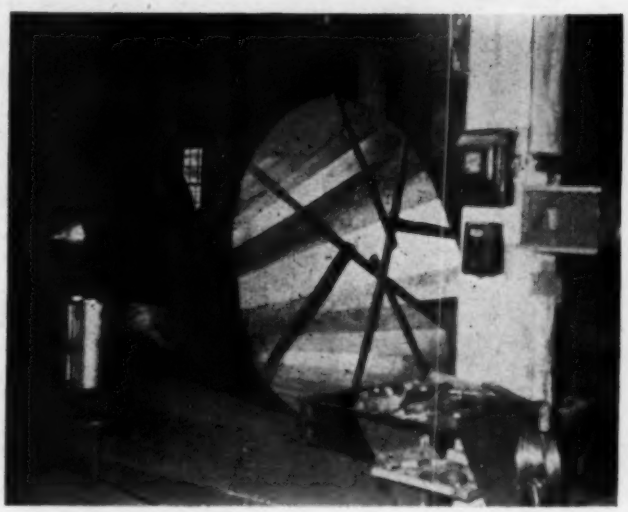


Left—Top: Stainless Steel exhaust stacks. Center: Cone transition. Below: Exhaust hood (rear view). Right—Top: Storm band ventilator, inside view. Center: Exhaust hood (front view). Below: Storm band ventilator, elevation.









Above: Cross-section of storm band vent. Right—Top: Copper Louver. Center: Upper section, cyclone collector. Bottom: Bottom section, cyclone collector.

in the production process, the vats give off a great deal of rather noisome vapors. An exhaust system had been in operation on these vats for some time, but it was not doing the kind of job that it should and seemed to need replacement. As a result, hoods were designed which would mount directly onto the vats and provide complete closure except for a material loading door in the front of the hood. With this type of hood, there would be little chance of any fumes escaping the ventilating system.

The hood, itself, is approximately seven feet high when installed and is made up of segments which were fabricated in the shop and assembled on the job. As can be seen from the accompanying photos, these are tapering segments and the hood is composed of sixteen long pieces (two being cut out for the door) and one short one which is directly over the door. When these segments are installed, the adjoining flanges are covered by a strip which acts as a cap over the joint and the four flanges are then bolted together, thus closing the cap also. Since the flanges and caps are on the inside of the hood, this construction seals the joint. As an economy measure in these days of severe shortages of material, some of the short segments were produced from scrap pieces that were spot-welded together to make them usable. Material specifications on the job called for Enduro No. 2 finish, stainless steel of 20 gauge weight. This gives a product of excellent appearance and of definite corrosion-resisting qualities, which is essential in an installation of this kind.

Parts Described

Other parts of the job are also illustrated showing what goes to make up this exhaust system. The hood is mounted directly on the vat and from the hood a cone transition connects to the stainless steel stack, several of which are shown. On top of the stack is installed a storm band type ventilator providing for escape of the fumes from the vat. Some idea of the magnitude of this job may be obtained from the fact that the material cost alone is over ten thousand dollars.

Another job photographed called for piping and hoods for a cupola blast system for a lead refinery. At the bottom of the assembly is a six-sided base for the cupola supply, then an involved transition piece,

(*Continued on Page* 128)

Getting the Most Out of Your Press Brake

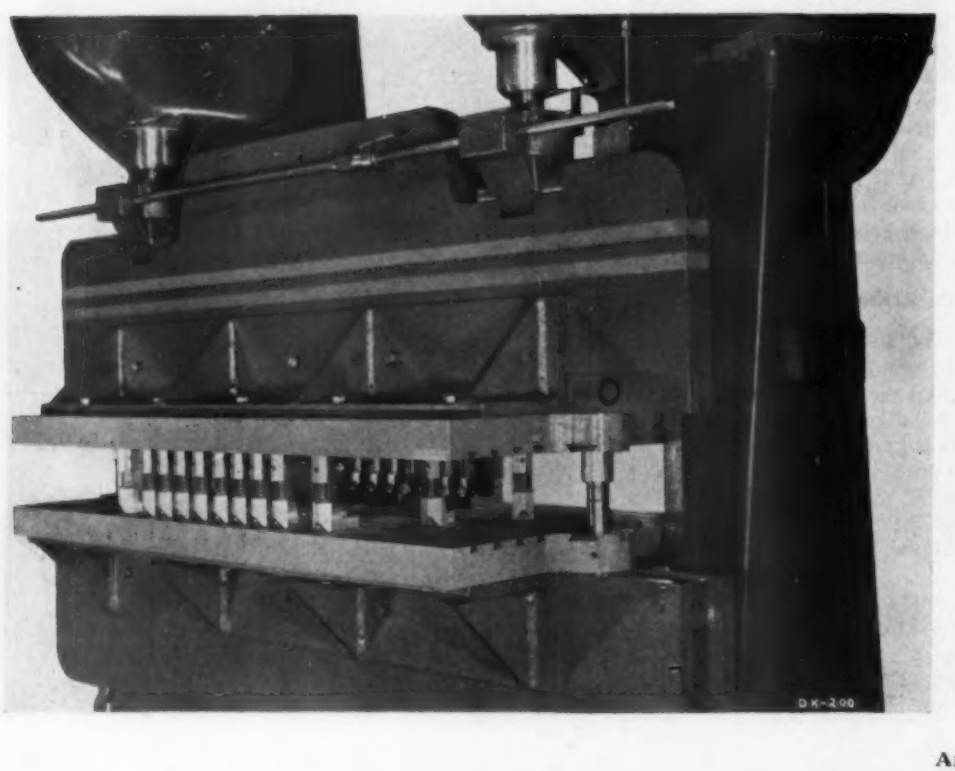
1001 Standard and Special Bending, Forming, Flanging, Punching Operations Your Press Brake Can Perform

By Ernest E. Zideck
Sheet Metal Consulting Engineer

Punching, Curved Shearing, Blanking, Notching in Press Brake

THE Press Brake has been adapted to perform like a Press, not only in producing curved formatures and not too bulky stampings in soft and mild temper metal (as will be shown in a subsequent article in this series), but also in punching holes for rivets and other purposes, blanking larger holes in the metal, round, square, or any other shape, shearing the metal on curved lines, and notching the sheet for box and pan forming and other production purposes. A great variety of tools and production aids are being offered the sheet metal shop and the fabricator, and the manufacturers of such equipment will supply catalogues illustrating and describing their products. Obviously we shall select such of the offered punching, blanking and curved shearing—notching press brake attachments as will fit our Press Brake, and do the work which we require, and do it according to our specifications. The fabricator of a specialty will select the tools most practical for his purpose, while a sheet metal shop doing a great variety of work will select tools adaptable to most of his work, and allow for the time taken to change from one set-up to another, or clear the brake for other work.

In the below illustration is shown a Press Brake equipped with two heavy metal plates, slotted for receiving punch and die holders insertable from the end of the plate. The plates are supported by heavy bolsters in the form of angles, which are bolted to the ram and to the brake bed, respectively, to hold the plates in position upon same, and uphold the plates extending, laterally, from the center of the common working area of the press brake. The two plates are connected one to the other by shafts and sleeves, the shafts located at the ends of the plates, holding the two plates in alignment, so that the punches inserted in the upper plate are guided, by the shafts moving in the sleeves, into the die openings, without injury to their cutting edges. Individual punch and die hold-



Press brake equipped with two heavy metal plates, slotted to receive punch and die holders. Setup used for multiple punching. (Dreis & Krump Mfg. Co. photo.)

ers are used in this arrangement, with both the holders freely movable along the entire length of the slots in the plates, for such positioning as may be required for the punching work at hand. The punches and the dies are interchangeable in the holders, so that varying size holes can be punched by inserting the desired sizes of punches and dies. This arrangement, it is evident, was devised for quantity production of a given part, with all the holes needed in the part being punched at one stroke of the press.

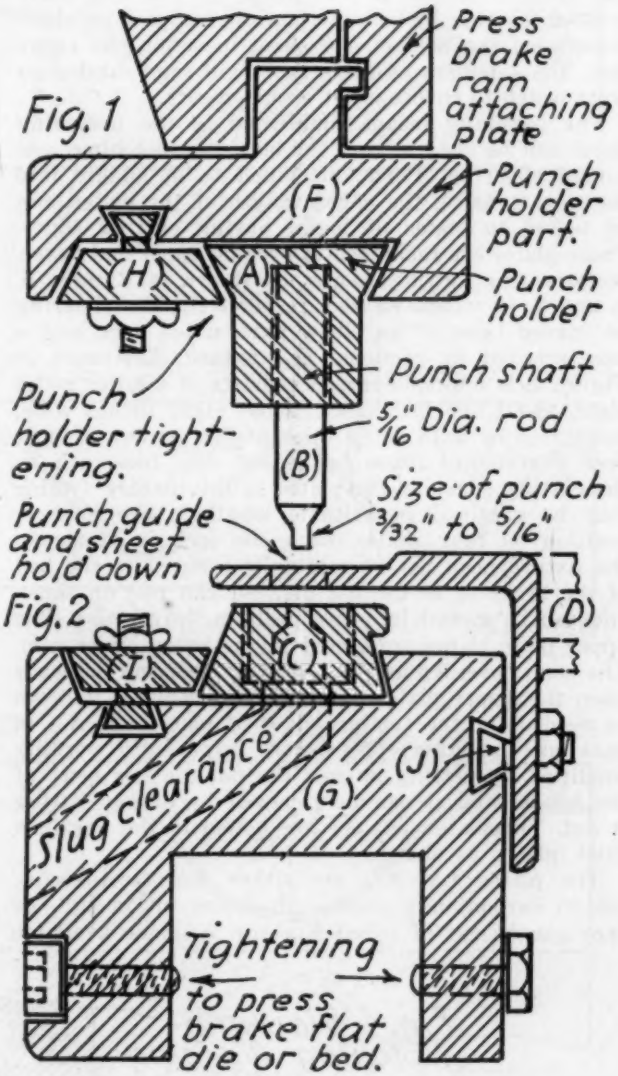
Drawings Explained

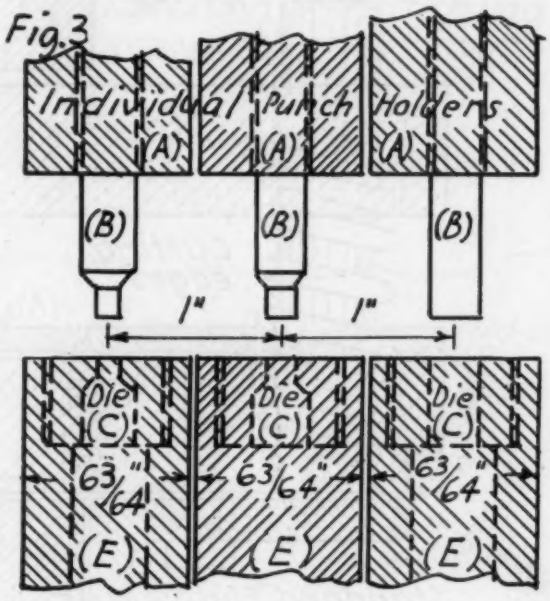
In Figures 1, 2, and 3, of the accompanying drawings, are shown individual punch and die holders, mountable directly upon the ram and the bed (or a standard flat die), of a press brake. These holders can be manufactured (supplied), in one inch widths, as shown in Figure 3, by the letters E, E, E, where the overall width is given as 63/64, to make feasible a punch-center distance of one inch. If more than one inch centers are required, plates or pieces of sheet metal can be inserted in-between the holders. The die holders E, E, E, are provided with bores of standard size, into which fit snugly the dies C, C, C, the standard diameter of which is three quarters of an inch. The dies are interchangeable in the holders, and can be of any punching size, from 1/16 to 5/16 holes, as shown. The punches B, B, B, are tight-fitted into the holders A, A, A, and are interchangeable, by insertion of a rod through the opening in the top of the holder and tapping with a hammer. As seen in Figures 1 and 2, the punch and the die holders are held tight within the parts F and G, by tightening the bolts through parts H and I. The holders are easily removed from parts F and G, by loosening the parts H and I. For practical purposes the punch (B) will remain mounted in the holder (A), unless it breaks, or for other reasons must be replaced.

Noteworthy Device

Special attention is merited by the attachment (D), shown in Figure 2.—The attachment was originally just a "sheet holddown," and will be so found in many cases. In the newer product of this kind (individual punch and die holders), the attachment (D) is made heavier, with the bolting means (J) extending throughout the length of the slot, so that (D) is securely aligned and remains in that position throughout the work of punching. The hole in (D) is made to receive the descending punch (B), and guide it into the opening in the die (C). It has been found that a press brake ram is subject to tremors, which cause the punch to move from the exact center, necessary for its descent into the opening in die (C), and the cutting edges of both the punch and the die to be damaged. This happens more often in older, much used press brakes. To guard against the cutting edges of the tools being sheared off, the attachment (D) has been improved as above said, serving in two capacities: (a), as a guide for the punch; and, (b), as preventing the sheet moving upwards with the punch.

The attachment (D), if left in the shape shown in Figure 2, will make impossible punching of holes farther away from the edge of the sheet than indicated in the drawing (about 1¼ of an inch). This attachment can be supplied in a different shape than shown. It extends to the rearward, as shown by "dotted" lines at (D), turning on a radius, and returning to the part (G) to which it mounts. Several more inches are thus added to the marginal width of the sheet pass-





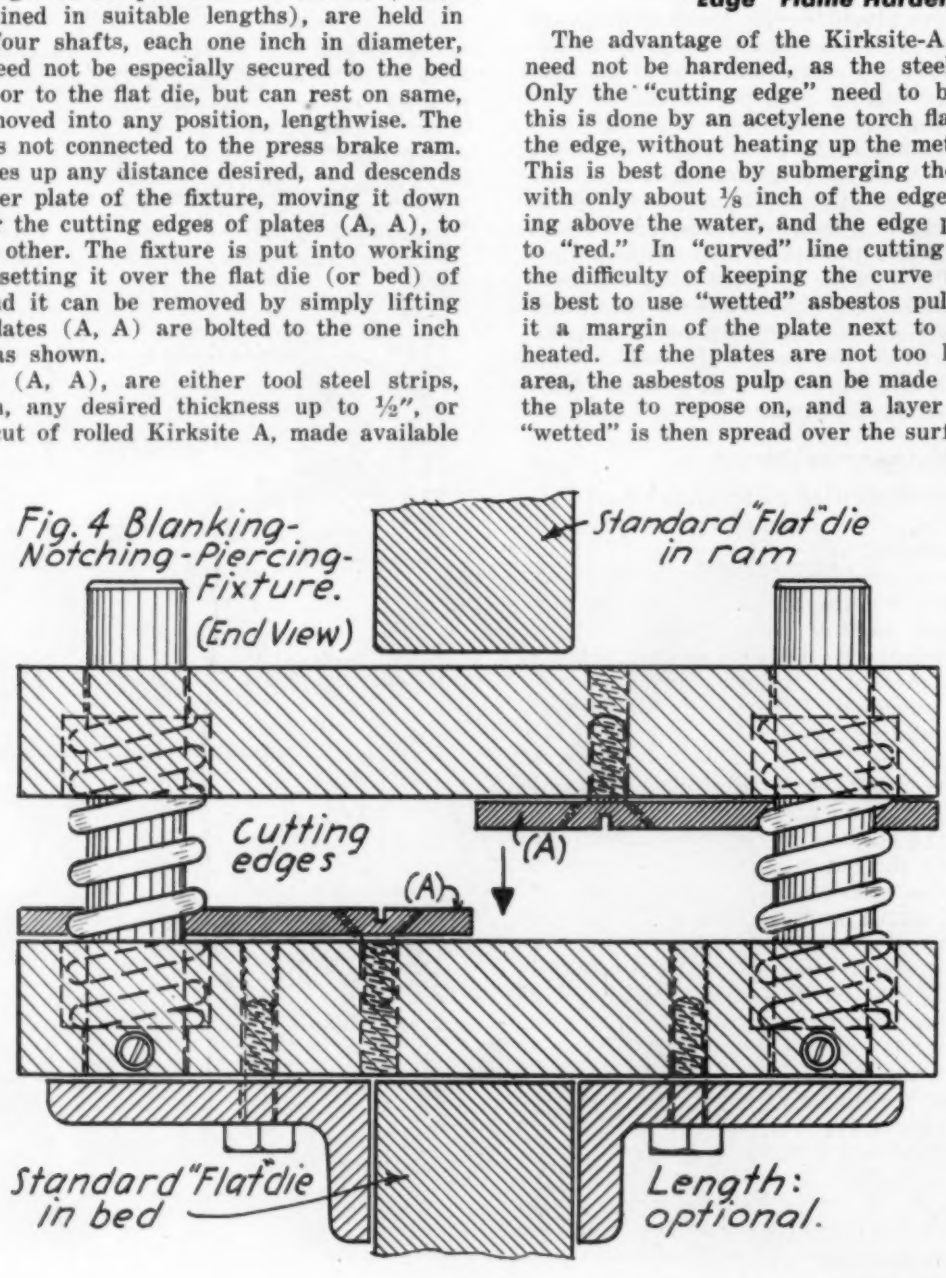
ing through for processing. Various other individual punching (single punch) attachments are being manufactured, among them a few, having both the punch and the die holder in one piece, or the two parts secured together by bolts, with a slot or space provided in-between the holders, for sheet insertion. As above said, the suppliers of these tools will send catalogues from which to choose exact requirements.

The punching means illustrated in the preceding photo can be used as well for blanking, notching, and curved shearing. Parts, machined to fit snugly into the slots running the entire length of the plates, can be bolted to plates of metal having cutting edges. These plates are fashioned to provide upper and lower, reciprocating cutting means, as shown in Figures 5, 6, and 7, in which we see, respectively, the shearing on curved lines of an elbow part, a tee part, and a part selected at random. The fixture illustrated in Figure 4, is a simple one. It consists of a lower metal plate, about one inch thick, about eight inches wide, reinforced by 5/16 or ⅜ thick angles, arranged to fit over a standard press brake flat die. Inasmuch as the cutting edges of the plates in this fixture (which may be obtained in suitable lengths), are held in position by four shafts, each one inch in diameter, the fixture need not be especially secured to the bed of the brake or to the flat die, but can rest on same, and can be moved into any position, lengthwise. The upper plate is not connected to the press brake ram. The ram moves up any distance desired, and descends upon the upper plate of the fixture, moving it down as needed for the cutting edges of plates (A, A), to pass one the other. The fixture is put into working condition by setting it over the flat die (or bed) of the brake, and it can be removed by simply lifting it out. The plates (A, A) are bolted to the one inch thick plates as shown.

The plates (A, A), are either tool steel strips, .85-.95 carbon, any desired thickness up to ½", or they can be cut of rolled Kirksite A, made available to the trade in sheets (plates) in thicknesses up to three eighths of an inch. (Kirksite A is handled by several branches of the National Lead Company). Both metals are processed similarly up to a certain point: (a) a sheet metal pattern is made to represent the blank (the curved line, square or round cutouts), see Figures 5 to 9), and the lines are reproduced on the steel or Kirksite plate; (b), if two halves are to be used (see Figures 5 to 7), the plate is cut (by a fine blade in a bandsaw), exactly on the lines demarked from the pattern; (c) if only one half is usable (cutout in the area of the plate), the cut is made slightly away from the line; (d) in each case the cut is finished by filing (or grinding), paying attention to the fact that the plates must pass one the other with only a "hair" spacing between them, and that it is better to have the "cutting edge" meet, with the "hair" spacing maintained under the cutting edge; (e), bolt holes are provided in the two plates (see Figures 5 to 7), and countersunk for "flush" bolting.

"Edge" Flame Hardened

The advantage of the Kirksite-A plate is that it need not be hardened, as the steel plate must be. Only the "cutting edge" need to be hardened, and this is done by an acetylene torch flame, moved along the edge, without heating up the metal away from it. This is best done by submerging the plate in water, with only about ⅛ inch of the edge portion remaining above the water, and the edge portion is heated to "red." In "curved" line cutting edge, owing to the difficulty of keeping the curve out of water, it is best to use "wetted" asbestos pulp, covering with it a margin of the plate next to the edge to be heated. If the plates are not too long or large in area, the asbestos pulp can be made into a "bed" for the plate to repose on, and a layer of the material "wetted" is then spread over the surface of the plate,



only the "edge" remaining free of it. In cutting out squares or other shape apertures within the area of the sheet, the following procedure has been in vogue: (a) a hole admitting the saw blade has been drilled in the area of the cutout; (b) the saw blade inserted through the hole; (c) the ends of the saw welded and the weld finished; (d) the portion then sawed out, leaving a "hair" of the metal for finishing by a file. The thinner the plate, the easier it is hardened by heating it up with the torch flame. It is not necessary that the "redness" of the metal extend more than 1/16 inch from the edge. But care must be taken not to overheat, the edge of the metal. In most cases (in cutting mild, thin sheets of steel, stainless, aluminum alloy, etc.) for "short runs," the hardening need consists of a mere touching of the cutting edge with the point of the flame (at a speed of over six inches per minute.) For heavier and harder metals the cutting edge has approximately one eighth of an inch penetration, the heating up being about four lineal inches per minute. (Rockwell, 58-60). No dipping in water or oil, or other hardening process is employed here. The heating up of the metal's edge and its subsequent cooling, by natural means, is sufficient.

Plate Sizes Needed

In Figure 5, the cutting plates, if employed for cutting to pattern, tinned sheets or galvanized sheets of a thickness usually used for elbows, and such blades as used for cutting similar metal or mild aluminum alloy or half-hard stainless steel of not more than .031 thickness, as per Figures 6 and 7, need not be over one eighth of an inch thick. But for notching as per Figures 8 and 9, there being "sharp" corners in the cutting edge ¼ inch plate is preferable. And, instead of having the corners absolutely sharp, it is better to provide a small radius, this being permissible in the blank, and the cutting edges of the plates lasting that much longer. Sheet metal exceeding the 18 gauge (.050), should not be cut by these dies (plates), because the plates might bend with binding in their cutting portion resulting. Plates ⅜ or ½ inch thick must be employed in the cutting of heavier gauges of metal. Needless to say, the press brake capacity must be taken into consideration in this cutting (or punching), and it is calculated that a sheet of the 26 gauge, high carbon or stainless steel or duraluminum, the sheet 10 feet long, will require eight tons pressure on a straight cut. A curved cut, and multiple notches will increase the pressure requirement to 10 tons. One hundred round holes in the above material, the holes ½ inch dia., can be punched under 15 tons pressure. The above material in the 15 gauge will need four times as much pressure in straight and curved shearing and hole punching, as given for the 26 guage, above. We can easily calculate that the intermediate gauges will require pressures in proportion to the thickness of the metal, as also that the milder metals, mild steel, brass, mild aluminum alloys etc., can be safely worked under about one half the pressure applying to the harder metals.

Use of Fixture

The fixture, Figure 4, can be employed, also, but this only, to be practical, if we want to do standard spacing hole-punching in one continuous row, such as is common for riveting. If the rivet holes are one inch apart, (or staggered, this making two standard rows), we provide the lower (heavy) plate with holes

(*Continued on Page* 126)

Fig. 5 Blanking plates

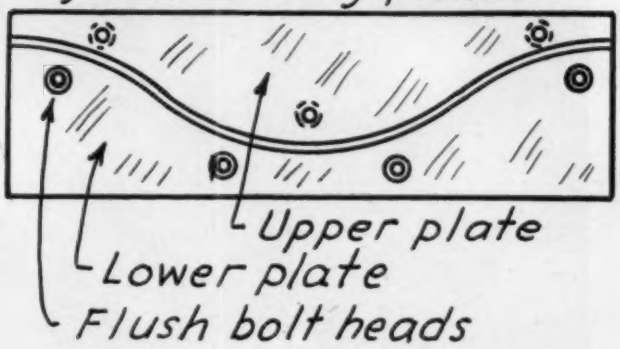


Fig. 6 "Tee" Parts blanking

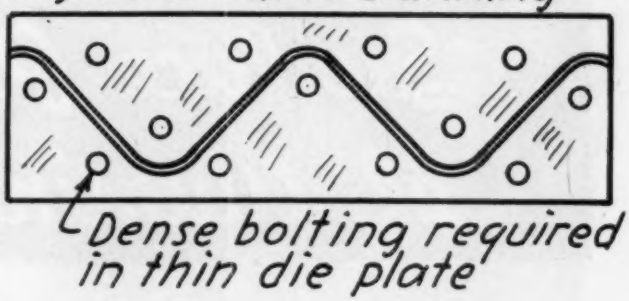


Fig. 7 Random blanking

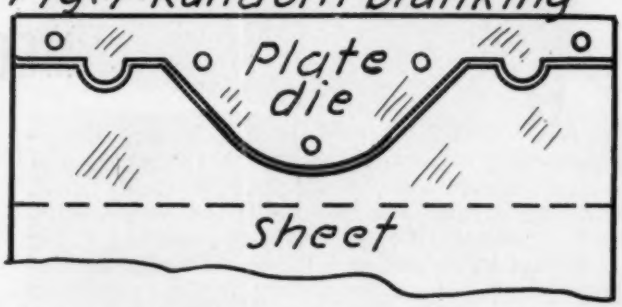


Fig. 8 Multiple notching.

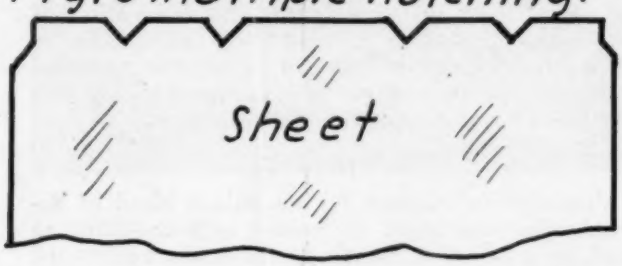
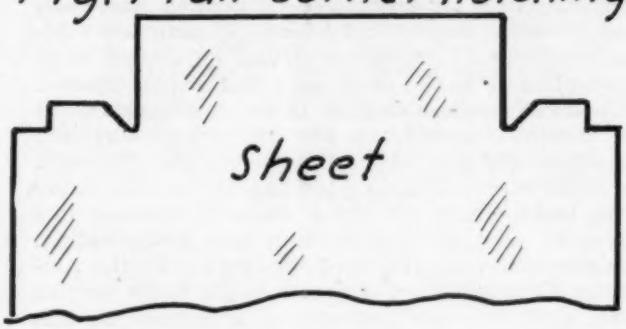


Fig. 9 Pan-corner notching.



Surface Preparation of Aluminum Alloys

PART I — INTRODUCTION AND MECHANICAL CLEANING

ALTHOUGH one of the earth's most abundant elements, aluminum used to be extremely difficult and expensive to obtain because of its great affinity for oxygen. The electrolytic process by which it is now produced is just over fifty years old. Using this method of separating it from its oxides, the aluminum producers have brought a wide variety of alloys to all manufacturers. Principal user during the war years was the giant aircraft industry which found the white, light metal ideal for the fabrication of weight-conscious aircraft. In addition to the aircraft, automobile, chemical and utensil industries, aluminum is finding sizable new markets in the fields of prefabricated housing and trailer construction.

Characteristics

Aluminum is valuable for its unique blend of desirable characteristics. It weighs only one-third as much as most other structural materials, resists the corrosive action of the atmosphere and a great variety of chemicals and has high thermal and electrical conductivity. It is excellent for fabrication processes, readily lending itself to machining, forming and welding techniques. Tremendous strides have been made in adapting it to the clean, fast spotwelding process.

Chemically pure aluminum is the most weldable of the aluminum family and has the highest corrosion resistance and electrical conductivity. Unfortunately, its tensile strength is low—insufficient for most structural tasks. There are three ways to increase this strength; alloying, cold-working and heat-treating. Commercially pure aluminum, designated by the Aluminum Corporation of America as 25 is 99 percent pure. Even the small amount of impurities in this metal increase the strength 50 percent over the chemically pure product. 3S alloy contains manganese and has higher strength properties but similar welding advantages compared with 2S.

Alloying

To obtain additional strength, aluminum is alloyed with magnesium and chromium in 52S which has twice the strength of 3S. This alloy is suitable for spotwelding but must be carefully handled when fusion welded to avoid cracking. Other alloys of aluminum which develop high strength characteristics from special heat treatment are the aluminum-magnesium-silicon alloys 53S and 61S. 24S is a copper alloy of aluminum which is quite difficult to fusion weld without sacrificing qualities of strength and corrosion resistance.

Other special alloys are 11S, with good machining properties, and 17S which has high resistance to salt water corrosion. In most cases, the alloying of aluminum has resulted in increases in mechanical strength coupled with decreases in corrosion resistance and formability. Airframe manufacturers, such as the Ryan Aeronautical Company, use enormous quantities of a particular type of alloy which is designed to provide both high strength and high corrosion resistance. This is called "Alclad." It is composed of a sandwich of alloy, usually consisting of 24S, covered with a thin coating of pure aluminum. The alloy core provides the structural strength. The aluminum coating provides protection from both atmospheric corrosion and galvanic attack.

Although aluminum's affinity for oxygen is a troublesome factor when obtaining the metal originally, it is

Article 2, to follow in the August issue, will discuss chemical cleaning of aluminum alloys with a variety of chemicals in common usage. Article 2 will also explain common tests for determining whether the cleaning process has been efficient.

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this property which accounts for its good corrosion resistance in air. It rapidly forms a thin adherent coat of oxide over its surface which prevents further action. However, this oxide coating has a higher electrical resistance than the alloy itself and must be removed before the metal can be satisfactorily spot-welded. Otherwise surface heating will occur and alloying or "pick-up" of the aluminum on the copper welding electrodes may result. Also, copper may deposit on the aluminum and reduce the metal's corrosion resistance through electrolytic action. All clean aluminum surfaces almost immediately begin to acquire this oxide film and will also form grease films if there are dirt and vapors in the atmosphere. Although it is possible to weld aluminum which has high surface resistance, due to these films, it is not practical to do so in production because of the great inconsistency in values which accompanies high contact resistances. This would necessitate constant adjustments of welding machines in order to compensate for these fluctuating values. Poor electrode tip life, expulsion of metal and welds of irregular size and strength may be expected when contact resistance is high. Low contact resistances, obtained by correct cleaning procedures, will produce sound, uniform spotwelds with predetermined machine settings.

Since surface preparation prior to spotwelding affects joint efficiency far more than any other welding variable, careful cleaning and handling are mandatory. This cleaning involves two basic operations. First, a pre-cleaning process to remove soil and grease which may have accumulated on the surface and, second, the removal of the oxide film which accrues to all aluminum exposed to air. There are two methods for preparing aluminum alloys for spotwelding; mechanical (wire brushing) and chemical.

Wire Brushing

To remove the oxides by the wire brush method, preclean the sheets with a standard commercial clean ing compound or trichlorethylene vapor to remove soil and grease where evident. Then, take a 2½ inch diameter, rotary, air-driven brush and buff the surface until a silk-like finish is obtained. Speed of the rotation must be adjusted to get the correct light buffing effect. Care must be exercised to prevent deep penetration of the aluminum. Steel brushes should be cleaned by vapor degreasing. Where only a few parts are involved, they may be cleaned economically by fine grades of abrasive cloth, steel wool or sand paper.

Wire brushing removes the oxide film completely and therefore produces a very low contact resistance but it is extremely critical to exposure time. The oxide coating begins to form almost immediately after

Photo on facing page shows arrangement of tanks at Ryan Aeronautical Corp. for nitrate salt bath. At top, above is spot welding operation on 50 caliber ammunition boxes in Allen Corp. In center, unique copper spot welding electrodes built at Ryan for spot welding inaccessible aluminum airplane structure—lower electrode is copper inlaid with steel to obtain greater strength. Lower photo shows typical small aluminum alloy parts used in aircraft.

Above is tank arrangement of nitric acid solution for cleaning all oxides and foreign material. Below is alkali cleaning tank arrangement for pre-cleaning aluminum.

brushing and at a rapid rate. Most authorities state that spotwelding should be performed within ten minutes after brushing in order to insure strong welds under factory conditions. If the metal is stored in a clean laboratory atmosphere, much longer periods up to 24 hours' duration may be experienced with good welding results.

When the oxide film does re-form after wire brush cleaning, it does so with uneven thickness. If the material is spotwelded, the extra resistance of the film accounts for a higher heat which forms a larger nugget. But in the corona area, where the heat is not as intense, the film acts as an insulator and prevents the bending of the corona surfaces. With 24ST material this defect is serious because the melting point of the clad aluminum is higher than that of the core alloy. In any event, the added corona strength which is located in the plane of sheer is sacrificed and maximum joint strength is not attained.

Another disadvantage of mechanical cleaning is the difficulty and time consumption involved in cleaning large sheets by this method for production use. It is not an efficient process under these conditions. Parts which have enclosed sections or lapping surfaces from which cleaning solution cannot be thoroughly rinsed, parts which have been drop hammer formed and parts .032″ or under which have been air reheat-treated may have to be wire brushed because of their characteristics which disqualify them from chemical cleaning.

What about built-in gutters?

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BUILT-IN GUTTERS: BOX GUTTER LININGS
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. . . Turn to Page 62 in "Copper and Common Sense"

SELDOM has a publication by a manufacturer received as wide a welcome as Revere's 96-page booklet, "Copper and Common Sense". The chances are you already have a copy, but if not, write for it now while there are still a few available. On questions of sheet copper construction you will find it gives the answers—complete.

On box gutter linings for built-in gutters, for example, there are six pages of details and text. Here, as elsewhere throughout the book, you get the latest, most authoritative facts on the best ways so far developed for designing and carrying out sheet copper construction. It is based on Revere's famous program of sheet copper research in which wholly new facts were discovered which reduce this type of construction to a matter of engineering design.

Checked and endorsed by leading architects and experienced sheet metal experts, the charts, details and information in this booklet are designed for practical men to use in solving their day-to-day problems.

Here is a simple, direct guide to longer lasting, more trouble-free sheet copper construction. It will always pay you to turn to this booklet first. Complimentary copies have been sent to all holders of Sweet's Architectural File, and, through Revere Distributors, to the majority of the sheet metal contractors throughout the country. For any further help you may wish, call on the Revere Technical Advisory Service, Architectural. Revere products are sold by Revere Distributors in all parts of the country.

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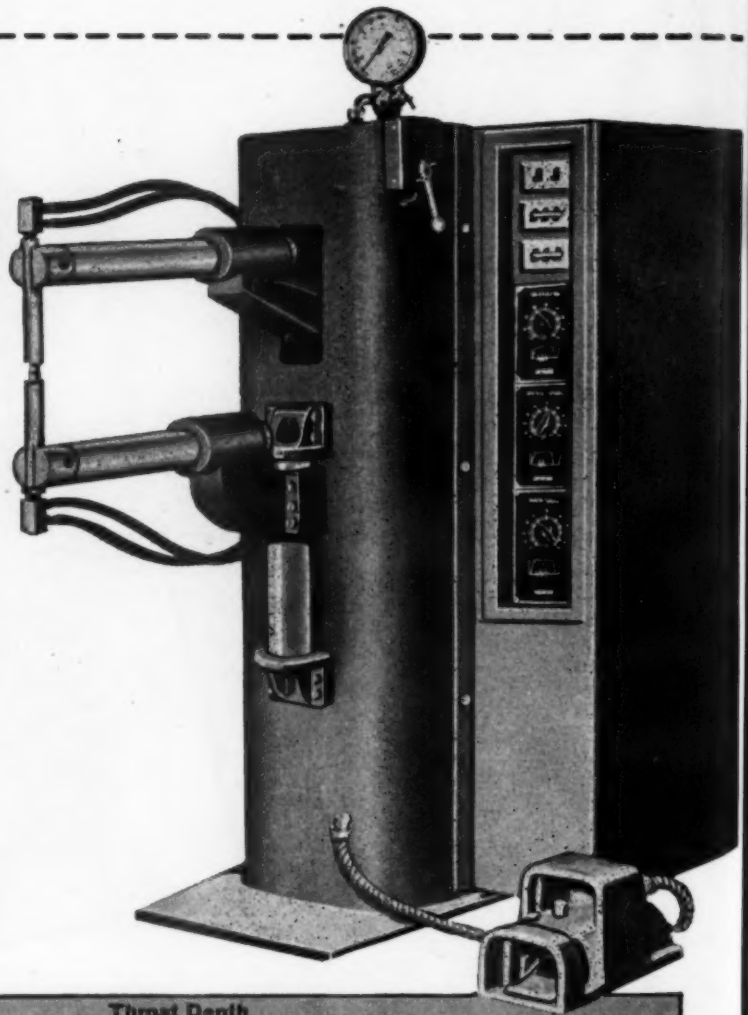

Popularity has demanded it! The versatility of this precision welder has been increased by providing a choice of 5 power ratings and 5 arm lengths. You can now choose a machine *tailored* to your fabricating problems—yet *low in price.*

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The chart below gives maximum capacities on clean, mild steel under the various KVA and throat depth conditions. Minimum weldable gauge is 28. (U. S. Standard)

Transformer Rating	Throat Depth 12"	18"	24"	30"	36"
20 KVA	16 Gauge	18 Gauge	19 Gauge	22 Gauge	Not Supplied
30 KVA	14 Gauge	16 Gauge	18 Gauge	19 Gauge	22 Gauge
40 KVA	13 Gauge	14 Gauge	16 Gauge	18 Gauge	19 Gauge
50 KVA	12 Gauge	13 Gauge	14 Gauge	16 Gauge	18 Gauge
75 KVA	11 Gauge	12 Gauge	13 Gauge	14 Gauge	16 Gauge

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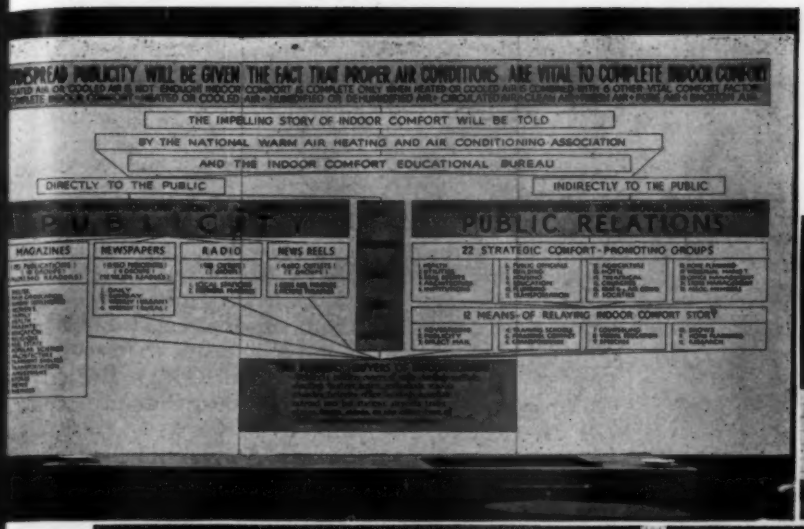
THE IMPELLING STORY OF INDOOR COMFORT WILL BE TOLD
BY THE NATIONAL WARM AIR HEATING AND AIR CONDITIONING ASSOCIATION
AND THE INDOOR COMFORT EDUCATIONAL BUREAU
DIRECTLY TO THE PUBLIC
INDIRECTLY TO THE PUBLIC
PUBLICITY
PUBLIC RELATIONS
MAGAZINES
NEWSPAPERS
RADIO
NEWS REELS
22 STRATEGIC COMFORT-PROMOTING GROUPS
12 MEANS OF RELAYING INDOOR COMFORT STORY

Views of the stage displays used by Publicity & Merchandising Committee Chairman James R. Scott (right) to tell the story of "Indoor Comfort," the new theme for the campaign. The new emblem is shown in the center of the stage. The large chart shows where and how advertising and publicity will be obtained.

National Warm Air Ass'n June Meeting

AT the mid-year meeting of the National Warm Air Heating and Air Conditioning Association, held in Chicago, June 25 and 26, three far reaching activities for the coming years were announced:

1. The publicity and advertising program the association has been formulating during the past year, has been placed under way and will begin officially within a matter of a few weeks.
2. The dealer engineering conferences have started —six pilot schools have been held and approximately 25 additional schools will be scheduled across the country for 1946.
3. Plans have been prepared and work will begin very quickly on the new Research Residence at the University of Illinois in Urbana.

Doctor Willard Testimonial

The Association also took the occasion to present Dr. Arthur C. Willard with a testimonial scroll in recognition of his many years of direct cooperation with the warm air heating industry in its research program. Dr. Willard retires this summer as the president of the University of Illinois. In accepting the testimonial, Dr. Willard read statements from his remarks made in 1915, recommending the inauguration of a research program by the warm air heating industry. He reminded his audience that he estimated the original program would be completed within five years, at which time probably all the answers the industry wanted would be obtained; now, it is evident, that the research program, in spite of its quarter century of continuous investigation is still far from completion; in fact there may be just as many things to determine now, as there were twenty-five years ago. Dr. Willard said that he suggested then, and restates now that particular attention should be paid to the structure itself, because unless the structure is properly put together it can never be satisfactorily heated without undue cost and without unnecessary complications.

Industry and education demonstrated cooperatively in years gone by, said Dr. Willard, and proved conclusively during the war period that science can help industry and industry can help science if the two will work together. The long research program of the warm air industry is more than sufficient proof of the results obtained from such co-operative efforts between industry and science. Dr. Willard urged that this co-operation between science and industry be continued in the case of the warm air industry because it now appears that research needs will be continuous.

President Keynotes Convention

Frank E. Mehrings, in his president's report, noted the important activities of this particular convention in pointing out that this industry can look back with complete satisfaction on its splendid record during the war when the manufacturers and the dealers produced and installed hundreds of thousands of its own products and hundreds of special items which contributed directly to winning the war. But, said President Mehrings, the problem now is to satisfactorily house hundreds of thousands of veterans and to provide complete and modern indoor comfort the year around to millions of home owners who are eagerly awaiting the latest developments in house heating and cooling.

President Mehrings (right) presenting association's testimonial scroll to Dr. Arthur C. Willard, retiring president of the Univesity of Illinois, in recognition of his quarter century of service to the association.

President Mehrings said the association is in a splendid position financially and from an organizational standpoint now to undertake practically any activity which seems important. More members, including manufacturers, jobbers and dealers, are desired in order that the financial condition of the association can be maintained on a sound basis and in order that the comprehensive program now to be launched can be carried to a satisfactory conclusion.

Competition, said President Mehrings, is getting keener and will continue to do so. Some forms of heating are currently riding a wave of popularity which has no foundation in experience and may prove to be just a passing fancy. But our industry cannot afford to depend upon any such occurrence, so it is up to the industry not only to protect itself against such encroachments, but also to make sure that the type of indoor comfort we offer is the most modern in every sense. Only with warm air heating can the home owner obtain heat, circulation, humidification, cleaning and cooling directly from the equipment which we install.

In order to satisfy the tremendous demand for products of this industry, he said, manufacturers are working 24-hour shifts to produce more and more equipment—the time is not far distant when the manufacturers will be able to provide the products in the quantities required. If our nation and our industry can mobilize to win a war (which was just as much a war of production as a war of combat), then, surely, said President Mehrings, our industry and the nation can mobilize themselves to win the peace. If our industry carries forward the far-reaching program of research and publicity planned, then there should be no reason why the industry cannot continue to dominate the residential indoor comfort market.

Publicity and Advertising Programs

The association's publicity and advertising programs, which have been described in detail, previously, in AMERICAN ARTISAN during the past two years, has reached the stage where the program can now, and will be, launched immediately. This will not be a program advertising furnaces for warm air heating—the theme of the campaign will be *Indoor Comfort*. To dramatize this program, Publicity and Merchandising Committee Chairman James R. Scott used a stage full of "visual props," as shown in the photographs which accompany this report. Around the central theme of "Indoor Comfort" there will be provided through consumer booklets and advertising in consumer publications, proof of the value of warm air heating over all other types of heating. This publicity material, which will be fed to home owners, will emphasize the seven factors of Indoor Comfort, which are: (1) Heated or cooled air; (2) humidification or dehumidification; (3) air cleaning; (4) air circulation; (5) fresh air; (6) pure air without any germs; (7) sufficient air.

Through advertising and consumers' booklets and publicity, the objectives of the merchandising and advertising campaign will be to:

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(2) The program will attempt to avoid creation of any and all sales resistance to warm air conditioning; the campaign will explain to owners how indoor comfort can be obtained and what type of equipment is necessary.

(3) As a part of the program, engineering conferences will be held to encourage better installations, and the program will stimulate and encourage newer and better types of heating and air conditioning equipment.

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G. A. Voorhees, who, as announced in AMERICAN ARTISAN, is heading up the engineering conferences reported to the convention that the program started on April 1st and was divided into four phases to cover the first twelve months of operation as follows: the first phase was to organize the program and material and conduct six conferences during April, May and June; these six conferences have been held. The second phase, during July, August and probably Sep-

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The intent of this educational program is to promote better warm air heating installations and to back up the national advertising campaign by insuring that satisfactory installation can and will be made by dealers of the industry. When time permits and based upon the questions most frequently asked by heating contractors attending the conferences, a series of bulletins will be prepared to be mailed at intervals, probably monthly, throughout 1947, to all manufacturers, jobbers and dealer members of the association and perhaps also to non-members who attended the 1946 dealer conferences.

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figures showing the terrific scarcities existing in hardwood flooring and lumber in soil pipe, concrete blocks, insulating board, and pig iron.

Just as great a scarcity, perhaps an even greater scarcity, exists in steel required for furnaces, ducts, registers, grilles and other heating equipment. Other scarce items required for housing are sinks, lavatories, water closets, and radiation. Mr. Davisson reported that approximately 45,000 furnaces were produced in May and it is anticipated June production will reach 55,000 furnaces, The requirements are a minimum of 65,000 to 75,000 furnaces per month for the balance of 1946. In view of the scarcity in steel, motors, transformers, pig iron and many other items which enter into furnace and heating accessories, it will be touch and go, he said, if the program is met.

Mr. Davisson said he personally believed that housing subsidies under the Wyatt program might help in certain classifications of materials or products, but he reminded his audience that these subsidies apply only to increased production, so it may be that greater relief will come from an increase in price ceilings. He said he hoped that Direction 12 to Order M-21 might result in the obtaining of additional steel by furnace and accessory manufacturers, but the Amendment has been in effect too short a time to determine as yet whether or not the order will bring more steel to the industry.

Home Research Center

William H. Scheick, Coordinator of Small Homes Council, University of Illinois, explained that the University two years ago, under the urging of President Arthur C. Willard, began an investigation of low-cost housing. A "Small Homes Council" was set up at the university to cut across all college lines and to consolidate and coordinate all university research activities which apply to housing. The Small Homes Council also began approximately two years ago the publication of circulars which have reached a distribution of more than 325,000 copies. These circulars deal with many phases of house construction and are given free to all prospective home builders or buyers. Mr. Scheick explained that throughout industry and in the university itself there are many programs of research under way related to house construction, but up to date these programs have been disjointed and not coordinated, with the result that each research activity or each industry follows its own course of research. This results in some waste of effort and time so that Small Homes Council hopes that a unified program will facilitate all research.

The new program at the low-cost housing center will deal specifically with cost reductions in house construction which the university anticipates will not come so much from a reduction in cost of common materials, but in the methods of construction and new materials. There will be at least fourteen houses in the Housing Center.

Research Residence

In connection with the new Research Residence, Frank Meyer, chairman, Research Advisory Committee, explained that FHA reports most new houses will be of the four to five-room size with roughly 800 to 1,000 square feet of floor area. With housing construction costs increased 50 to 75 and even 100 per cent over 1939, it does seem likely, he said, that smaller, more compact houses of the low-cost variety will be most popular. Therefore, the old Research Residence is much too large and is not now and will not be typical of the type of houses built in the rest of the 1940's. Mr. Meyer briefly described the new Research Residence as reported in this issue of AMERICAN ARTISAN.

Entertainment

Through the courtesy of the Chicago Convention Committee, a cocktail party was staged on the evening of the first day. The committee also made arrangements for members and guests to attend the Arlington Park Jockey Club horse races on the afternoon of the second day. In view of the fact that many of the members and guests of the association like to play golf, arrangements were made at the Elmhurst Country Club for a full day of golfing with luncheon and dinner after the convention adjourned. Prizes were given for low gross scores, low net scores, low putts and high putts, high gross, blind bogey and even prizes for the non-golfers.

Bituminous Coal Research

AT A MEETING of the National Coal Association held recently Dr. H. J. Rose, Vice-President and Director of Research of Bituminous Coal Research, outlined the projects of the BCR program. More than $400,000 has been allotted to the current budget of BCR and about 47% of this budget is for research on subjects affecting convenience, comfort and cleanliness in heating. Some of the BCR projects on residential and small commercial uses are: Improved designs for coal-heated homes; better chimneys; ash-removal-stoker development; determining the performance and rating of ash-removal-stokers, using various coals; improving automatic-coal-feeding methods.

Dr. Rose reported that "The first two experimental units of the inverted under-feed type stokers, in which both coal and air move downward, have given promising results. Additional units of this type are being built to determine the effect of stoker dimensions, and to permit trials of larger variety of coals."

It was pointed out that while there is only one ash-removal-stocker on the market for bituminous coals "BCR has under consideration some nine models of ash-removal-stokers which are in various stages of development by BCR and others. As rapidly as suitable models can be obtained, they will be systematically tested for performance, adaptability to various types of coal and rating."

"Attention is also being given to improved methods of feeding coal from bins or hoppers to fireboxes. The causes of stoker-screw corrosion and methods of preventing it have been discovered and reported."

Other BCR projects include smoke prevention by overfire air jets using either steam jets with silencers, or blowers; a meter for coal-air mixture under industrial power and heating projects.

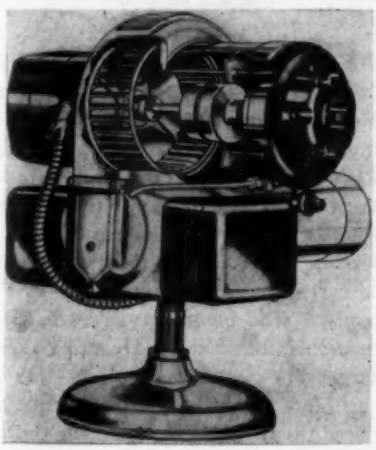
Equipment Developments

For your convenience a number has been assigned to each item. Circle the items in which you are interested on the coupon on page 104 and mail to us.

△ Indicates manufacturer not listed in 1946 Directory.
• Indicates product not listed in 1946 Directory.

• 61—Economy Clutch

Gilbert & Barker Manufacturing Company, West Springfield, Mass., announces a new oil burner equipped with the "Economy Clutch." The starting of the burner motor simultaneously sets the air fan in motion; an instant later, when the fan is delivering sufficient air for complete and even combustion, the Economy Clutch goes into action and by centrifugal force engages the fuel pump. The purpose of the delayed-action operation is to guarantee an abundance of air when the fuel and air mixture is ignited, thus eliminating smoking and sooting from unburned oil.



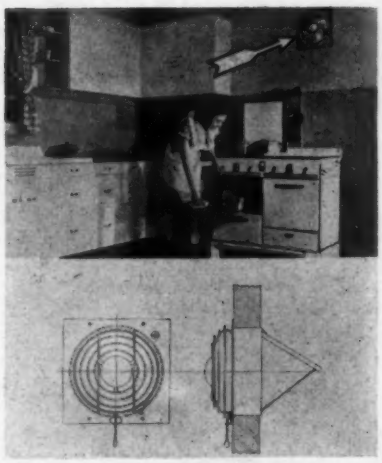
The clutch action is reversed when the burner is turned off. The fuel pump is first to stop operating, while the fan is still rotating for several seconds after the flame has ceased. The principle assures complete combustion of the last drop of fuel without smoke.

The clutch arrangement is patented.

◆

62—Ilgvent

Ilg Electric Ventilating Co., 2850 N. Crawford Ave., Chicago 41, offers the "Ilgvent 8-in. Package-Type" ventilating fan with a 3⅜-inch sleeve for mounting in thin walls. It is suitable for installation in a steel sash or other small panel window, with unit



replacing one pane of glass.

The fan unit is mounted in a steel panel with sleeve which extends through the wall. Electrical connection can be made from a circuit in the wall or with an extension cord to nearby electrical outlet. Beaded pull chain is used to open or close weather-tight outer door, simultaneously starting or stopping operation of fan.

Capacity of the 8-in. Ilgvent is 350 cfm. It will provide a two-minute air change in kitchens up to 700 cubic feet in area.

Complete details are contained in Bulletin A-1041.

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• 63—Reynalite

Reynolds Metals Company, Richmond 19, Va., announces "Reynalite" —a light-weight, high-strength, economical aluminum building material.

Reynalite combines two sheets of aluminum bonded with a plastic adhesive, to a cellulosic core to form an attractive panel which possesses rigidity, thwarts harmful elements, and is easily worked. A wood veneer surface can be bonded to either or both of the metal surfaces. Reynalite has all the long-life qualities of seasoned lumber, plus the advantages of the combination aluminum-core and can be used for warm or cold air ducts.

Reynalite is uniform in quality, has high insulating value, resists lightning and fire, and is insect proof. It can be fastened with nails or screws and is worked with ordinary carpenter tools. It can be cut on wood-working or metal-working equipment.

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64—Morey Hammers

Dan Morey, 814 S. Robertson Blvd., Los Angeles 35, offers the Morey hammer for double seaming of sheet metal, drawing rivets through sheet metal or corrugated roofing, and for general use in machine, body, fender and tire shops.

These patented Morey hammers combine weight without bulk or clumsiness to give balance.

◆

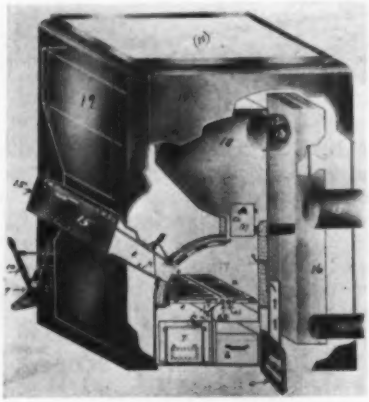
65—Motletone

Maas & Waldstein Company, 438 Riverside Avenue, Newark 4, New Jersey, announces a new coating which produces a lustrous hammered effect in a single spray-coat application. The new product, which is marketed as Motletone, is available as an air-dry or baking finish.

Equipment Developments

For your convenience in obtaining information regarding these items, use the coupon on page 104.

△ 66—One-Minute Furnace



Worsham Company, Incorporated, 7329 Lohmeyer, St. Louis 17, offers the One-Minute furnace, using solid fuels—screenings, stoker sizes and sizes up to 4-inch lumps—briquettes, anthracite, smokeless coals, coke and even some sizes of packaged fuels.

This semi-automatic furnace, also available in stove sizes, is of heavy steel, all welded joints. Outside casing is white enamel or a variety of colors.

The furnace is shipped as illustrated and the heating merchant who installs it puts on the bonnet with the proper number of warm air pipes; and brings in the cold air duct at the base on the back. In this cold air duct, the regular standard type of fan with filters can be installed.

The bonnet capacity ranges from 120,000 Btu up to 360,000.

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67—Metal Cleaners

Pennsylvania Salt Manufacturing Company, 1000 Widener Bldg., Philadelphia 7, announces first production of two new products — Pennsalt cleaner A-22 for aluminum alloys and PM-95, an acid base cleaning and descaling compound.

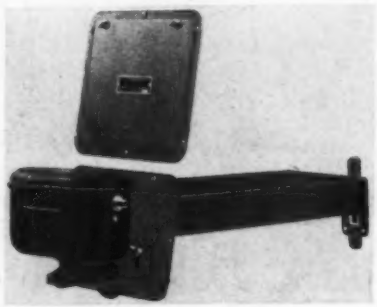
Pennsalt cleaner A-22 is a general purpose soak tank cleaner for use on all aluminum alloys. Most common applications are cleaning aluminum before anodizing, chromodizing, phosphatizing and other pre-painting treatment and before deoxidizing and subsequent spot welding.

Pennsalt PM-95 is a specially prepared cleaning and descaling compound containing additional agents for surfacing action and inhibition. Suggested uses are general pickling and metal descaling, especially for difficult-to-remove oxides resulting from heat treating or annealing.

68—Humidifier

Skuttle Manufacturing Company, 517 East Larned Street, Detroit 26, announces a new model automatic humidifier, "Skuttle, series 500."

Drawn-steel pan construction is entirely without welding. The humidifier can be adjusted to fit various furnace sizes and an adjustable collar design will fit either sloping or vertical bonnets. A large inspection door



and frame may be mounted at any convenient location on the furnace bonnet. The door is not connected with the humidifier. Water tank and valve assembly are constructed of pure copper and brass. Tubing, clamp and float valve are included as standard equipment.

Length of pan sizes are 12, 16, 20, 24, and 28 in.

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● 69—Portable Pyrometer

The Wheelco Instruments Company, 847 W. Harrison street, Chicago, presents a new extension type portable pyrometer.

This unit has been designed to permit a choice of plug-in angle extensions where a number of applications necessitate a universal instrument for measuring and checking temperatures requiring the use of different kinds of thermocouples. The new Wheelco instrument is recommended for use where a rugged, flexible light weight and accurate portable pyrometer is an essential requirement for quality control in plant and foundry.

△ 70—Moore Fan

The Moore Company, 544 Westport Rd., Kansas City 2, Mo., announces a newly designed corrosion resistant fan of monel metal for damp or corrosive vapors, or of cold rolled steel for ordinary exhaust ventilation and cooling. Made in three to five foot diameters, the fan is of the axial-flow ventilating type. A special high slip, slow speed, direct-drive motor, equipped with permanently greased and sealed ball bearings makes it possible to mount the fan in any position. The motor is an 18-pole,

375 rpm, 220 volt, single phase; or 220-440 volt, three phase, with an input of 700 watts. The motor is internally cooled by circulating air within the hub of the fan without drawing in outside air that might be contaminated. Guide vanes on the inlet side of the fan reduce the tendency to corkscrew with the rotation of the blades. The blade tips revolve within a ring that reduces tip losses. The large hub eliminates that portion of the blade that has a low peripheral speed and thereby voids the possibility of a backflow of air through the center of the fan. The fan illustrated is the ventilating type for near free air delivery.

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● 71—Governoil Nozzle

Automatic Burner Corporation, 1823 Carroll Ave., Chicago 12, offers the Governoil nozzle, to deliver an actual gallonage at the correct angle of spray. Oil is delivered into the combustion chamber with a swirling motion in a fine mist.

The Governoil is a precision made nozzle that improves spin, decreases friction and pressure loss, holds correct spray angle at all pressures and produces proper distribution of oil sprays, in capacities of 0.6 to 6.0 gallons per hour at 100-pound pressure.

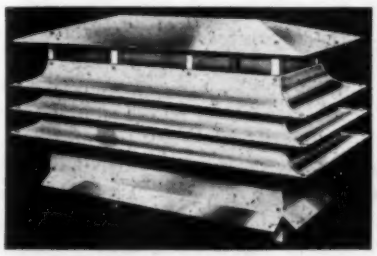
Equipment Developments

For your convenience in obtaining information regarding these items, use the coupon on page 104.

△ 72—Airjet Ventilators

The C. R. Gelert Company, 35 North Raymond Avenue, Pasadena 1, California, has developed a new line of wind induced ventilators, under the trade name of Airjet, designed to bring efficient ventilation to industrial and commercial buildings and to residences at a low cost.

These light weight ventilators have a low silhouette which adapts them to



present day architecture. Even the largest sizes need not be mounted over roof trusses, nor is additional flashing necessary. They have no moving parts and efficiency is certified by tests conducted in the Merrill Wind Tunnel by California Institute of Technology. Regardless of wind direction or turbulence caused by obstructions, Airjets eliminate downdrafts and stagnant air. Airjets require no transition basis.

All Airjet units are machine made in volume and packaged "knock-down."

Airjet Vent Flue Caps are available in 4 and 6 in. diameter throat dimensions. Ventilators are furnished in six sizes with throat areas ranging from 12 x 12¾ in. to 24 x 72 ¾ in. The Monitor type is 24 in. wide and is available in any length desired.

◆

△ 73—U-G-L Aluminum

United Gilsonite Laboratories, Scranton, Pennsylvania, announces a new aluminum roof paint which forms a reflecting, protective covering over a structure, providing longer life for the surface and reducing inside temperatures.

The new paint is processed from a high quality gilsonite asphalt base and fortified with a specially processed pure aluminum paste. When the paint is applied, the aluminum pigment "leafs" to the surface to form a foil-like, metallic shield against the elements. The brightness, or reflectivity, of this aluminum shield reflects 80 per cent of the destructive rays of the sun.

This double-purpose paint is suitable for use on smooth or slate roll roofing, asphalt shingles, built-up, slag or metal roofs. It is also made for outside metal work such as tanks, flashings, iron fences, etc.

74—Cuprodine

American Chemical Paint Company, Ambler, Pa., offers Cuprodine, a powdered chemical, which when dissolved in dilute sulphuric acid, forms a solution which produces adherent, bright copper coatings on steel surfaces by simple immersion, without the use of electric current.

The Cuprodine coating applied to steel products that are to be drawn will enable them to withstand many more drafts than when they are coated with the usual "acid Copper" solution. Die life is increased, metal pickup is reduced, uniformity of drawing is improved, and scratches and breakage in the drawing operations are minimized.

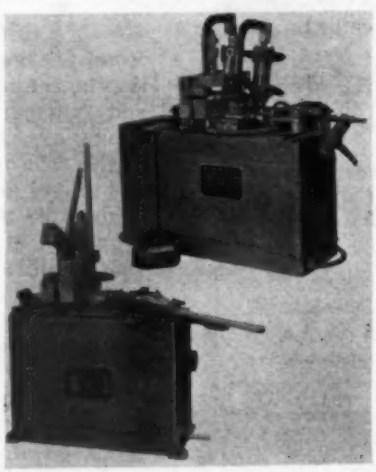
Technical Service Data Sheet No. 13-9-2-2 gives conditions under which Cuprodine is used, equipment required, steps in the process, and a description and control of solutions.

◆

75—Butt Welders

Universal Welder Corporation, 715 Carnegie Ave., Cleveland 15, is manufacturing a new line of hand operated and air operated "Midget" Butt Welders. These units parallel their popular 3 KVA Midget spot welder and 7½ KVA Midget spot welder.

These bench model precision welders are available in 10 KVA and 20



KVA with either hand or air-operated clamps and with hand or air-operated push-up features.

In the manual type machines these units afford a rugged butt welder capable of welding intermittently up to ½ in. round steel and larger for infrequent uses.

The air operated units are equipped with a foot switch that starts the cycle by clamping the weldment—followed automatically by the completion of heating, weld, push up, and release of the welded part.

△76—Gas Burner

The Barton Company, 64 Glenwood Ave., Minneapolis 3, announces volume production of an approved new type, gas-fired conversion burner for home heating plants.

Full approval of the Barton burner has been granted by the Minneapolis Gas Light Company following laboratory checks, and the new product is now in the final stages of test by the A.G.A.

A feature is a special burner unit equipped with a large, spreader-type baffle. It is designed to fit any round or rectangular heating plant with a firepot size from 14 to 30 in. Capacity of the burner is 275 cubic feet per hour with a 200,000 Btu input. The unit for shipping weighs 65 lbs.

Assembled in one unit are the pressure regulator, electric gas valve, needle valve screw, adjustable orifice, and telescoping ventura mixing tube.

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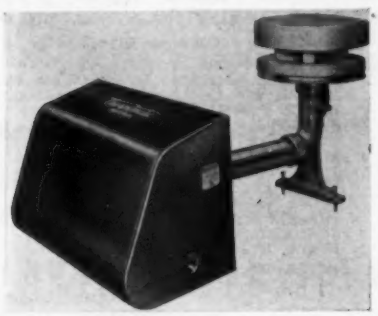
△ 77—Thermomatic Universal

Willoughby Machine and Tool Co., Willoughby, Ohio, offers the Thermomatic gas conversion burner to quickly convert practically any size furnace to automatic gas heating. No cement-



ing or brickwork is necessary, and one model readily heats any size home.

The Thermomatic does not alter the furnace in any way; it is fully automatic and controlled entirely by a room thermostat. Other features are: automatic safety pilot, automatic gas valve; gas pressure regulator; absence of moving parts; silence of operation; low initial cost; and AGA approval.

ASSOCIATION ACTIVITIES

Florida

The Roofing and Sheet Metal Contractors' Association of Florida held their annual convention at the Hotel Pennsylvania, West Palm Beach on April 26, 27 and 28. The convention Committeemen—J. A. Gross, F. A. Carpenter, W. V. Kinsey, Henry Delburn, Jack Strong and J. T. Stewart—are to be congratulated, as are the ladies entertainment committee, which included Mrs. J. T. Stewart, Mrs. Adolf Widell, Mrs. F. F. Ahrens, Mrs. F. A. Carpenter, Mrs. R. E. Moorehead, Mrs. Henry Delburn, Mrs. William Palmer, Mrs. Ellard Kahn, and Mrs. Edwina Henderson.

Highlights of the convention included a talk by Burnis T. Coleman, Tallahassee, of the Florida Industrial Commission, who mentioned a possibility that the 1947 Legislature may provide for additional reduction of tax payments for unemployment compensation for employers who qualify. Speaking unofficially, as concerning this forecast, he said "Such action would be in line with steps taken by recent legislatures to reduce tax percentages collected from employers showing a small labor turn-over during a period of years."

Mr. Coleman was introduced by State Representative John E. Bollinger, who said that in his work at Tallahassee, he had found the commission doing an excellent job.

After L. S. Dasher, Director for South Florida of the Apprentice Training Service of the Department of Labor, outlined means of setting up such training programs in communities through joint labor-management committees, the association voted creation of a committee to be named later, to foster such work.

The May 25 issue of "The Florida Roofer" thanks the manufacturers entertainment committee, made up of Neil Shay (American Brass), W. L. Johanessen (The Philip Carey Co.), W. G. Holley, (Mifflin Hood Co.), H. O. Bishop (The Barrett Division), Mr. Hamilton (Johns-Manville) and C. K. Sanborn (Ludowici-Celadon Co.) for their efforts in making the convention a success.

Officers Elected for 1946-1947:

President—S. L. Boyett, St. Petersburg
1st V. P.—John A. Gross, West Palm Beach
2nd V. P.—Ed. Durham, Jacksonville
3rd V. P.—W. N. Palmer, Miami
Secy-Treas.—John C. Caldwell, Orlando

Directors:

Mack Fillingham, Jacksonvile
J. A. Tucker, Ocala
H. M. Force, Daytona
O. J. Nettles, Tallahassee
Howard Carpenter, West Palm Beach
Joe Alzpuri, Tampa
Frank Tack, Clearwater

Tampa was chosen as the 1947 Convention City.

John C. Caldwell, Secy.-Treas.,
P. O. Box 2987, Orlando, Florida.

◆

Detroit

The Detroit Association of Warm Air Heating and Air Conditioning Contractors, Inc., is planning an all-expense-included trip for members, their wives, members of their families and friends to visit Niagara Falls, leaving Detroit on the "Greater Detroiter"—the largest liner on the great lakes—August 16, 17 and 18.

The agenda includes Friday evening dinner at seven and dancing afterward. Comfortable outside staterooms have been reserved. After a good night's rest and a hearty breakfast, Buffalo buses have been chartered to convey members to the falls for the whole day of relaxation and fun—the Horseshoe falls, historic Maid-of-the-Mist and the wonder of the falls, themselves to be enjoyed time and again.

Following is a brief schedule:

Lv. Detroit—Aug. 16th—Friday—5:30 P. M. (Ft. of Third Street)
Ar. Buffalo—Aug. 17th—Saturday—9:00 A. M.
Lv. D. & C. Wharf—9:30 A. M.—sight seeing tour to falls 4:30 P. M.—return to Wharf
Lv. Buffalo—Aug. 17th—Saturday—5:30 P. M.
Ar. Detroit—Aug. 18th—Sunday—9:00 A. M.

	Rates—Per Person Double Occupancy	Single Occupancy
Outside Stateroom	$24.40	$29.00
Toilet Stateroom	$25.55	$31.30

A third person in any accommodation will pay only $19.80 if an adult, or $11.75 for a child between 5 and 12 years of age. Children in any other arrangement will pay $8.05 less than adult fare for similar accommodations.

There are only 60 staterooms accommodating 120 people held for the Association at this time.

The deadline for reservations is June 20th!

Marshall H. Vanassche, COMMITTEE ON ARRANGEMENTS, Chairman, TW 1-4877, 19331 Mt. Elliott, Detroit 12, Mich.

◆

Hammond

ASSOCIATED Air Conditioning and Sheet Metal Contractors Association, local organization serving the far south side of Chicago and adjoining Illinois and Northern Indiana communities, held its third annual association banquet on June 18. This banquet is the association's annual get-together for members and wives and guests and has become one of the memorable meetings of this organization during the year. H. M. Daily is president, Erwin Klawinski is vice president, H. Witt is treasurer, and A. R. Harris is the secretary.

This association is now about ten years old and as a result of ten years of experience has now adopted the policy of soliciting membership only from contractors who have a sincere interest in association matters and are willing to attend meetings rather than soliciting a large membership, many of whom do not care to attend meetings or participate in association affairs.

President Daily asked each of the members to say a few words and then called on the ladies present to offer any suggestions or criticisms of the annual affair. The general expression from members and guests was that the fellowship enjoyed through association affairs is of more importance than any direct business benefits which may result from association membership.

The association invited two guests who were asked to say a few words. John Primich, Jr., of the G. W. Berkheimer Company, Gary, expressed the opinion that contractors today are sitting in golden seats and can confidently anticipate a period of business volume

This fine oil burner...

Your best bet for Better Business!

TODAY'S PETRO OIL BURNER welcomes your most exacting examination. Point by point, feature by feature, it invites critical inspection, study and comparison. Go as far as you like—for the more detailed your investigation, the more enthusiastic your appreciation of those unmatched performance features that have identified Petro Oil Burning Equipment for over 40 years.

Because Petro is and always has been the first choice of discriminating owners who want only the best in oil heat, today's demand for Petro is unprecedented. This gratifying trend is your best bet for volume oil burner sales in the months and years ahead. Decide now to take advantage of it!

Consisting of attractively styled conversion burners and units, Petro Oil Heating Equipment is distributed through established heating wholesalers. Write for the name of supply house nearest to you!

PETRO MEETS ALL NEEDS...
yours included!

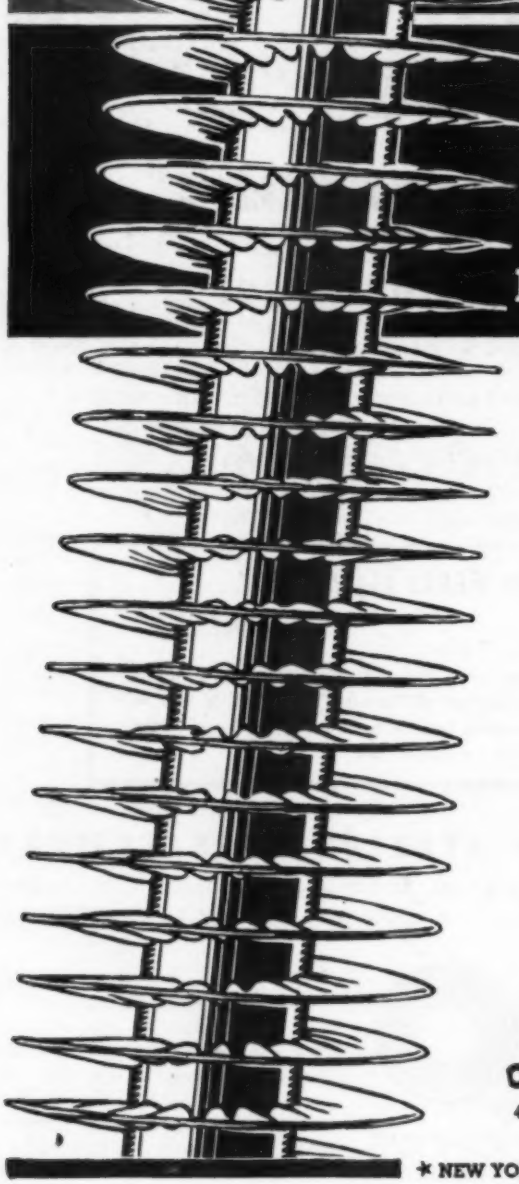
You may obtain Petro Oil Burners handling from 1 to 18 gal. per hr. of "domestic" fuel oils, as well as units handling from 11 to 145 gal. per hr. of heavy "commercial-industrial" oils.

PETROLEUM HEAT AND POWER COMPANY · STAMFORD, CONNECTICUT

PETRO FUEL OIL BULK PLANTS, DISTRIBUTION TERMINALS AND FACILITIES IN: BOSTON · PROVIDENCE · STAMFORD
MT. VERNON · NEW YORK · LONG ISLAND · NEWARK · PHILADELPHIA · BALTIMORE · WASHINGTON · CHICAGO

PETRO
REG. U. S. PAT. OFF.

MAKERS OF GOOD OIL BURNING EQUIPMENT
SINCE 1903



Aircraft Plants Specify

AEROFIN

HEAT TRANSFER SURFACE

Aerofin's proved materials and manufacturing methods eliminate breakdowns and reduce servicing.

Aerofin engineering, based on accurate published ratings, fits the right equipment to the job.

Metallic bonding and complete tinning give highest practical heat transfer and protection from corrosion.

Compact, light weight, easy to install.

Standard line of heavy duty coils for unusual applications.

SPECIFIED BY LEADING ENGINEERS
FOR EXCEPTIONAL PERFORMANCE

AEROFIN CORPORATION
416 South Geddes Street, Syracuse, New York

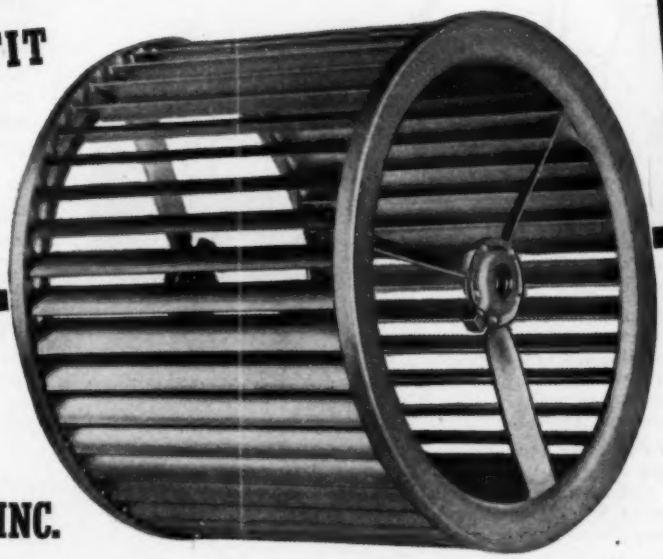
Aerofin is sold only by Manufacturers of Nationally Advertised Fan System Apparatus
— List Upon Request —

★ NEW YORK • CHICAGO • CLEVELAND • DETROIT • PHILADELPHIA • DALLAS • TORONTO

Build Your Own Blower Assemblies

BUYING ONLY THE WHEELS, AND RETAINING THE MANUFACTURING PROFIT IN YOUR OWN PLANT

Ask for the Facts!



MORRISON PRODUCTS, INC.

Supplies to Original Equipment Manufacturers

NOT ONLY

MORRISON *Airstream* Blower Wheels

Die-formed (patented process) from Continuous Strip Steel

But also Morrison Complete Engineering Service

with all Detailed Drawings for Economical Building of Blower Assemblies Specifically Meeting Requirements.

MORRISON *Airstream*

☆ *Exclusive Blower Wheel manufacturers for the Warm Air Heating-Evaporation Cooling and Blower Assembly Industries.* ☆

MORRISON PRODUCTS, INC.

East 168th Street and Waterloo Road

CLEVELAND 10, OHIO

THE LINE THAT HOOKS THE PROFITS IS.. FIRELINE

YOU bring home those profitable furnace repair jobs when you use the Fireline line of heating specialties. Heading the list is Fireline Stove & Furnace Lining and here's why it's a great profit hooker:

Quickly installed: Fireline comes in moist, plastic form, ready to use. You pound the Fireline material into place, then smooth it off—that's all. The work is done through the firing door—dismantling the furnace is unnecessary. You can handle more repair jobs with the same labor—make a higher percentage of profit.

No castings needed: You don't lose work and profits for lack of firepot castings—not with Fireline! Fireline forms a modern refractory lining one to 1½ in. thick around the entire firepot, sealing cracks and holes. Your men keep busy despite the casting shortage.

Countless prospects! Every warm-air plant is a prospect for you. Where firepot castings are still in good condition, Fireline is sold to preserve the castings and save fuel. In steel furnaces, Fireline can be moulded to any shape to replace or repair refractory tile. It is ideal for stoker hearths and oil burner combustion chambers.

HERE ARE TWO OTHER PROFIT HOOKERS

Ironset Asbestos Furnace Cement—The high-quality cement for setting up new furnaces and re-cementing old ones. Withstands higher temperatures. Will not crack, shrink, bloat, or blister. Makes your work more permanent. Try it on your next job and see how Ironset builds up your reputation for permanent, gas-tight work. You can't afford to use any cement but the best.

Fire-Hearth Castable—The ideal refractory for setting stokers, forming precast combustion chambers and baffle tile. Easily installed: just mix with water, pour into place, and trowel smooth. That's all there is to it.

Fireline heating specialties are carried by leading jobbers. Write for free descriptive literature, prices, and discount.

FIRELINE STOVE & FURNACE LINING CO.
1816 Kingsbury St. (Dept. G) Chicago 14, Ill.

FIRELINE
HEATING SPECIALTIES

New Literature

161—Building Necessities

The Majestic Company, Huntington, Indiana, is distributing a 32-page booklet listing Majestic Building Necessities, including fireplace circulator units, coal chutes, fireplace dampers, clean-out and ashpit doors; flue thimbles, grates, grilles, ventilating brick and attic ventilators.

◆

162—Ideal Dust Collector

Ideal Industries, Inc., 1294 Park Ave., Sycamore, Illinois, is distributing a 4-page folder illustrating and describing the Ideal dust collector, completely enclosed and ready to install on grinders, buffers, sanders, polishers, lathes, and other machines where dust is a problem. Warm, clean air is exhausted back into the air. A filter supplements twin cyclone cleaners enclosed in a metal housing.

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163—Welding Calculator

The Lincoln Electric Company, 12818 Coit Road, Cleveland 1, is distributing a "Welding Preheat and Interpass Temperature Calculator" with instructions.

"As the number or percentage of elements in steel increases and the thickness of plates to be welded increases, preheating may become desirable for high quality welds. Most steels are readily weldable and require no preheating. This calculator is designed for the few cases where experience indicated steel needs preheating for best results."

◆

164—Planing Mill Exhauster Catalog

B. F. Sturtevant Company, Division of Westinghouse Electric, Hyde Park, Boston 36, offers a new catalog with uses, construction and sizes of exhaust fans, particularly designed for dust control, fume exhaust, and collecting and conveying materials which can be carried on a current of air. This includes cotton and wool fibres, sawdust, shavings, paper clippings, wood and metal chips and dust from grinding operations.

Outstanding feature is large capacity for a given size and high efficiency. Performance tables give ratings for fans with wheels from 25 to 60 in. diameter with capacities from 680 cfm to 20,000 cfm at pressures from 1 to 12 in. static pressure. A special table permits a short cut method for determining fan performance, making extensive calculations unnecessary, and a chart is included, showing pressure loss in round ducts.

◆

165—Service Manual

Evans Products Company, 15310 Fullerton, Detroit 27, is distributing the Evans 1946 home heater and water heater service manual. Copies are available to all distributors and dealers at a small nominal fee.

The 46-page manual, bound in blue leatherette and illustrated with 82 photographs and illustrations, contains, in addition to sections on installation and servicing, chapters on the basic theory of combustion, causes and corrections of heat losses in homes, methods of determining heat loss, functioning of chimneys and drafts, and a chart of United States climatic conditions. The climatic chart lists average, lowest, and design temperatures, and prevailing wind direction and average velocity in each state.

The manual contains 12 pages devoted to correct installation, illustrated with 21 photographs and sketches, and a four-page supplement on the operation of oil control valves. Data sheets for Evans 1938-1946 home heaters and water heaters give model numbers, Btu output, burner size, cubic centimeters of oil flow per minute at high and low fires, and draft on high fire.

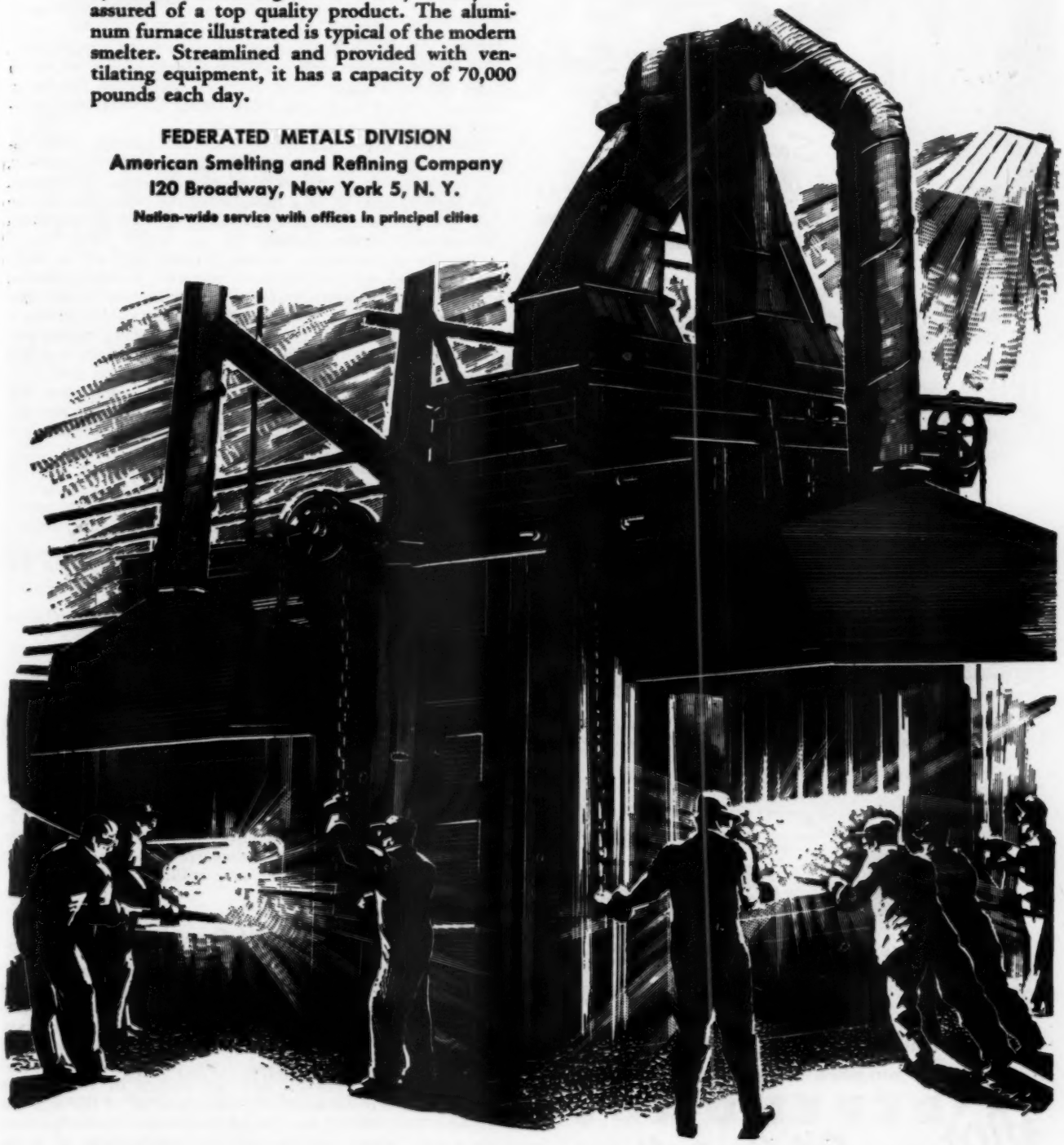
Federated — MODERN HEADQUARTERS FOR NON-FERROUS METALS

SMELTING—In the early days, furnaces were like Topsy, "they just growed". In Federated, furnace design is based on sound and tried engineering principles. Besides this, scientific instruments are used to control the operation of the furnace so that human failures can be minimized. Even more important is the metallurgical control and precise refining practice exercised while the metal is being processed. Each step in the process is carefully checked by trained metallurgists so that you may be assured of a top quality product. The aluminum furnace illustrated is typical of the modern smelter. Streamlined and provided with ventilating equipment, it has a capacity of 70,000 pounds each day.

FMD *Federated*

FEDERATED METALS DIVISION
American Smelting and Refining Company
120 Broadway, New York 5, N. Y.

Nation-wide service with offices in principal cities



ALUMINUM • BRASS • BRONZE • BABBITT • DIE CASTING ALLOYS • SOLDER • TYPE METAL • ZINC DUST

Make **EXTRA** *Sales and Profits this Summer . . .*

Install A-P THERMOSTATIC HEAT CONTROL on all your present Oil Burning Space Heaters!

This new "Sales Package" can be installed on *any* oil burning space heater using any A-P Constant Level Oil Control made since 1938. This means *extra* sales to most of the customers to whom you sold heaters since 1939, for they will all welcome the added convenience, luxury and oil-saving advantages of *Automatic Temperature Control* — steady room comfort at the touch of a thermostat dial.

A-P Model 240-ED Electric Heat Regulator Conversion Set

EASY TO INSTALL . . .

Complete Conversion Set includes: Electric Conversion Top, Wall Thermostat, Transformer, Wire, Staples and full instructions.

JUST MOUNT ELECTRIC CONVERSION TOP ON THE MANUAL CONTROL NOW ON THE HEATER . . .

CONNECT TO TRANSFORMER . . .

AND WALL-MOUNTED THERMOSTAT . . .

AND ANY VAPORIZING BURNER HEATER IS READY FOR AUTOMATIC TEMPERATURE REGULATION.

Write for Details and Prices today . . . FOR SUMMER PROFITS

Selling Aids Available . . . **FREE**

Colorful folders for counter distribution or statement mailing; counter or window display cards are available free to help you to ready summer sales of A-P Heat Regulator Conversion Sets.

AUTOMATIC PRODUCTS COMPANY

2452 NORTH THIRTY-SECOND STREET, MILWAUKEE 10, WISCONSIN

DEPENDABLE *Oil Controls*

DESIGNED TO ELIMINATE SERVICING

New Literature

For your convenience in obtaining copies of New Literature use the coupon on page 104.

166—Home Insulation

Small Homes Council, Mumford House, University of Illinois, Urbana, has released Circular Series F6.0, entitled "Insulation in the Home," telling about a saving of as much as one-half the winter fuel bill.

Fifty percent is the saving estimate for a typical two-story frame house with wood or shingle siding to which tight storm windows and doors, 4 inches of insulation between ceiling joists and 3 5/8 inches between wall studding is applied.

The facts about insulation and fuel saving, many resulting from years of careful research at the University, are presented in a free eight-page non-technical circular. The high spot in it is a table showing reductions in the fuel bill possible in eight typical types of construction for one or two-story homes.

Benefits of insulation, include greater comfort by making wall and window surfaces warmer, reducing drafts, and making heat more uniform; cooler houses in summer; and money saved by reducing fuel needs and requiring a smaller heating plant or less load on existing equipment. Also, walls and ceilings are cleaner because dust and dirt does not gather on warm surfaces as it does on cold.

Good insulation will not attract insects and mice, will not form a fire hazard, will not absorb moisture and get soggy, and will not deteriorate or settle, the circular explains.

Types of insulation include flexible insulation such as blankets or batts of mineral wool made of slag, glass, or rock; fill-type insulation to be poured or blown into place; reflective insulation involving metal foil or a foil surface; and insulating boards.

Storm sash, also a part of the home fuel-saving picture, are discussed in another free circular, F11.2.

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167—Flame Cutting

A. M. Byers Company, Clark Bldg., Pittsburgh 22, announces a service bulletin covering recommended practices for welding and flame cutting of wrought iron pipe and flat rolled products. Pioneers in the development of radiant heating and automatic snow melting systems, the Company believes that proper welding procedures are important in the fabrication of such systems, as well as for installation of other wrought iron piping services in the plumbing, heating, ventilating and refrigeration fields. The book contains a comprehensive welding chart that can be removed and tacked on a wall.

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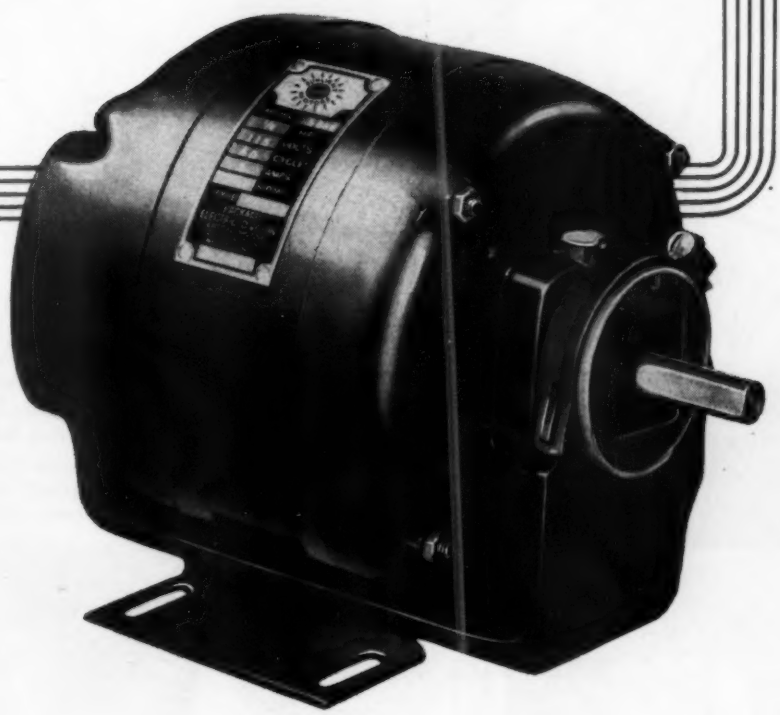
168—Oil Supply

Williams Oil-O-Matic Division Eureka Williams Corporation, Bloomington, Illinois, offers a 20-page booklet by W. A. Matheson, manager Williams Oil-O-Matic Division, vice president Eureka Williams Corporation, covering the advantages of automatic oil heat with a brief history of oil at war during World Wars I and II and a discussion of the world's oil reserves. Also an outline of the various types of modern oil burners, a presentation of the case for modern engineering by the oil heat industry to produce more and better burners and the development of a research program which is providing hitherto undreamed of experiences in perfect home heating comfort.

Production Standards AS HIGH AS EVER

PACKARD SUNLIGHT MOTORS



Packard has never sacrificed production *standards* to increase production *schedules*—and Packard never will. That's why, right now, you may have to wait your turn for Packard Sunlight motors. But you can be sure that every Packard Sunlight motor delivered lives up to the Packard reputation for quality and performance.

Packard
REG. U.S. PAT. OFF.
TRADE MARK

Packard Electric Division, General Motors Corporation, Warren, Ohio

PACKARD SUNLIGHT MOTORS for: compressors . . . washing machines . . . power-driven bench tools . . . ironers . . . milk separators . . . milking machines . . . furnace blowers . . . stokers . . . oil burners . . . water pumps . . . ventilators . . . and many other applications.

DEPENDABLE APPLIANCE MOTORS FOR TWENTY-NINE YEARS

"I'm looking forward to the leisure time I'll have—no furnace tending with the 'O.P' *Pipeline* Coal Burner."

"I know I can depend on 'O.P.' to fill the house with even, healthful coal heat—and do it quietly and efficiently."

"The *Pipeline* is tops for cleanliness—no coal or ash dust. The basement will be an ideal place to work and play."

"We know why we want a

HER REASONS

Pipeline SALES POINTS

1. Rotary Coal Collector . . . saves bin alterations . . . eliminates shoveling . . . conveys coal into *Pipeline.*
2. Universal Knuckle . . . accessory equipment . . . pipes coal at angle and around corners.
3. Double Overload Protection . . . circuit-breaking overload de protects motor. . . . mechanical shear pin prevents damage to *Pipe*
4. Ash Container . . . stores ashes piped from furnace . . . easy to em . . . dust-proof.
5. Chrome Nickel Alloy Retort and Grates . . . guaranteed durab . . . practically indestructible . . . revolving grates distribute coal efficient combustion and sift ashes through to *Pipeline.*

"O.P." *The Pipeline* COAL BURNE

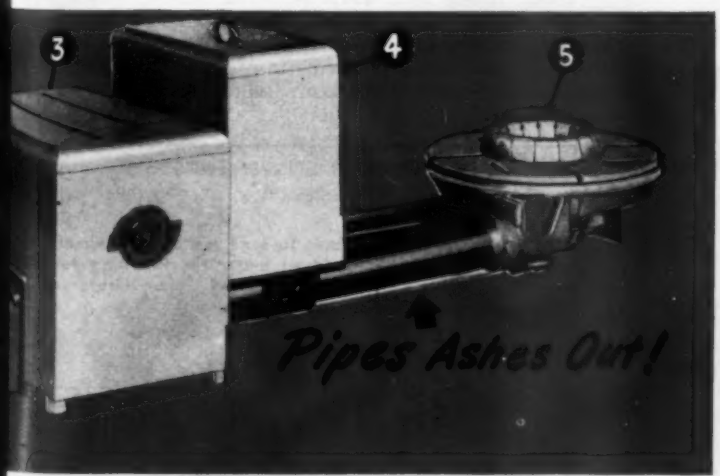
ORIGINAL POCAHONTAS' *Pipeline Coal Burner*"

THIS REASONS

Dealer, you may rightly ask, "Why all this clamor for the 'O.P.' *Pipeline* Coal Burner?"

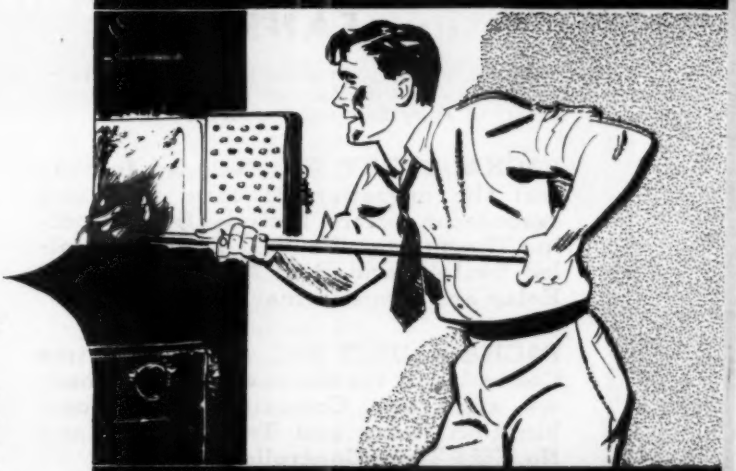
as simple as this: The public is demanding completely automatic heat—*The Pipeline* is the first successful bituminous coal burner rovide fully automatic operation—from coal bin to ash container. refore, the public is in the market for the "Original Pocahontas" *line* Coal Burner.

ales success now and in the competitive selling days ahead, sign ow. Write for detailed information on an "O.P." franchise—your tory may still be open. Pocahontas Fuel Company Incorporated, er Division, 338 East 131st Street, Cleveland 8, Ohio.



E FIRST SUCCESSFUL BITUMINOUS
N-FEED ASH REMOVAL COAL BURNER
. . . SUCCESSOR TO THE STOKER

"*Pipeline* 'O.P.' to the rescue! I won't have to break my back shoveling tons of coal into the furnace or into a hopper."



"Wrestle with clinkers? Not when I get my 'O.P.' *Pipeline*—it pipes the ashes to storage in an easily emptied, dust-proof container."

"Down with high fuel costs! The 'O.P.' *Pipeline* gives fully automatic heat at the lowest cost by burning economical screenings and inexpensive stoker-sizes of bituminous coal."

SELL

Sampsel

AUTOMATIC CONTROLS *for* ATTIC *and* WINDOW FANS

Here are two profit-makers for summer sales — both typical of the efficiency and rugged dependability of every Sampsel Product!

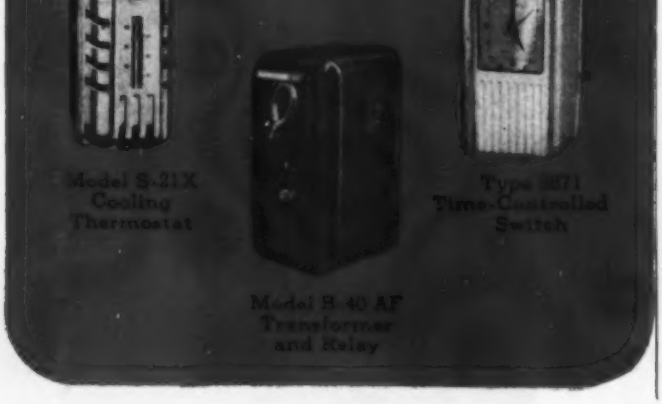
PACKAGE UNIT 5873 designed to control the operation of attic fans and evaporator coolers. Includes S-21X Cooling Thermostat; No. 5871 Time-Controlled Switch; and B-40 AF Combination Relay and Transformer.

PACKAGE UNIT 8067, automatic Time Control Unit for the operation of brooders, signs, etc. Consists of B-40 Combination Relay and Transformer; and No. 5871 Time-Controlled Switch.

Sampsel makes a complete line of controls for gas — oil — stoker — hand-fired furnaces and boilers. Send for FREE Catalog!

SAMPSEL TIME CONTROL, INC.

SPRING VALLEY, ILLINOIS



New Literature

For your convenience in obtaining copies of New Literature use the coupon on this page.

169—Precision Combustion

York-Shipley, Incorporated, York, Pa., offers Bulletin ID-4-6H with complete data on the York-Heat line of industrial conversion burners—a twelve-page bulletin entitled "Precision Combustion."

Theme of the catalog centers around York-Heat's three exclusive features: the Flame Former, Iris Shutter and Tear Drop Valve, and the Automatic Torch Lighter. With the Flame Former, it is possible to adjust the flame to fit any type of heater without interchanging parts. The Iris Shutter and Tear Drop Valve synchronize the air-oil adjustment so that steady steam pressures may be maintained under varying load conditions. This is graphically illustrated through actual operation charts. The Automatic Torch Lighter is a pressure type ignitor which assures ignition in the combustion chamber.

◆

170—Metalworking Tools

Whitney Metal Tool Company, 110 Forbes Street, Rockford, Illinois, is offering Catalog No. 16-45, entitled "Whitney-Jensen Metal Working Tools and Machinery"—punches, shears, foot presses, bending brakes, power presses, power shears, dies and small tools—42 pages and cover, indexed. This Catalog No. 16-45 is dedicated to John Jensen, late president.

◆

171—Fastener Bulletin

Shakeproof, Inc., 2501 N. Keeler Ave., Chicago 39, has published a bulletin containing engineering and procurement data of the new Shakeproof Q-Two quick-operating fastener for removable and hinged panels.

Its eight pages introduce the Q-Two addition to the Shakeproof line, present the advantages to general industrial users, include installation instructions, parts data and many illustrations.

◆

172—Resistance Welding

Sciaky Bros., Inc., 4915 W. 67th Street, Chicago 38, publishes monthly a house organ entitled "Resistance Welding at Work," devoted primarily to step-by-step analyses of interesting problems in resistance welding fabrication. Interested fabricators will be placed on a free mailing list.

FOR YOUR CONVENIENCE

American Artisan, 6 N. Michigan Ave.
Chicago 2, Ill.

Please ask the manufacturer to send me more information about the equipment mentioned under the following reference numbers in "New Products" and "New Literature." (Circle numbers in which you are interested):

61	62	63	64	65	66
67	68	69	70	71	72
73	74	75	76	77	
161	162	163	164	165	166
167	168	169	170	171	172

Name .....

Company .....

Address .....

Are you Manufacturer——Jobber——Dealer——

FOR YOU...This new free file of tested application methods

KIMSUL
INSULATION
APPLICATION
DATA FILE
AIA FILE 37B
PAGE
1 • How to Measure and Cut KIMSUL . . 801
2 • Where to Install In New Frame Construction 803
3 • Where to Install In Existing Frame Construction 805
4 • How to Insulate Side Walls of New Frame Construction 807
5 • How to Insulate Ceilings from Below (New Construction) 809
6 • How to Insulate Ceilings from Above (New or Existing Construction) . . 811
7 • How to Insulate Rafter Sections (New or Existing Construction) 813
8 • How to Insulate Floors (New Construction) 815
9 • How to Insulate Floored Attics (Existing Construction) 817
10 • Ventilation 819
11 • Stapling or Nailing 821
A PRODUCT OF Kimberly Clark RESEARCH
KIMBERLY-CLARK CORPORATION
Neenah, Wisconsin

Here to serve you is a new, profitable working tool—a practical file of KIMSUL* application methods, worked out by insulation engineers to help you do a perfect job in a minimum of time.

Proved in practice by thousands of builders, these are tested methods for simplifying your operation. They show you in full technical detail—with 40 accurate drawings and sketches—how much more easily prefabricated *many-layer* KIMSUL blanket insulation is applied in new or existing construction.

Learn how much better and easier it is to work with this superior insulation. Mail the coupon for your free, factual Application Data File today.

We are producing all the KIMSUL Insulation we possibly can, but due to the great demand, your dealer may have some difficulty in supplying your requirements as promptly as usual.

KIMSUL
REG. U.S. PAT. OFF.
INSULATION
A PRODUCT OF Kimberly Clark RESEARCH

*KIMSUL (*trade-mark*) means Kimberly-Clark Insulation*

KIMBERLY-CLARK CORPORATION AA-746
KIMSUL Division, Neenah, Wisconsin

Please send at once free Application Data File on *many-layer* KIMSUL Insulation.

*Name*_____

*Firm*_____

*Address*_____

*City*_____ *Zone*_____ *State*_____

Check these advantages in the New Viking Humidifier

VIKING "TOP SEAT" FLOAT VALVE

COPPER FLOAT TANK

For Dependable Humidification

Positive Action

Throttle type action maintains the proper water level at all times . . . no complicated high and low level actuating points.

For occasional servicing or cleaning the brass wing nut can be loosened and the whole assembly exposed.

Disengage the brass cotter key and the complete float assembly can be removed for inspection or cleaning.

Here is the humidifier you've been waiting for. Simple and easy to install and designed to operate for years with little or no attention.

Exhaustive study and research under actual operating conditions has dictated the need for a simple, easy to clean valve and an acid resisting water supply tank. Viking has the solution.

THE VALVE

Made entirely of brass and located above the water level in the supply tank. Simple rocker action . . . no springs no sliding parts.

THE TANK

Deep drawn from 24 oz. copper in a single piece . . . no seams . . . no welds. Located outside the bonnet or plenum . . . readily accessible for occasional inspection or cleaning.

WRITE TODAY

. . . get complete information and specifications on a dependable humidifier.

Viking

ARMY NAVY FOR EXCELLENCE

AIR CONDITIONING CORP. 5600 WALWORTH AVE. CLEVELAND 2, OHIO

With the Manufacturers

United States Air Conditioning Corporation is now operating in the new plant recently purchased at 33rd and Como Avenue Southeast, Minneapolis 14. The new building provides approximately 100,000 square feet of manufacturing and office space—plenty of room for usAIRco's vast expansion program. The company designs and manufactures a complete line of air conditioning equipment blowers, fans, air washers, cooling and heating coils, humidifying and dehumidifying equipment, together with such pre-engineered, package units as usAIRco Refrigerated Kooler-aire and Evaporative Kooler-aire. Design improvements have recently been made in a number of usAIRco products.

◆

F. W. Hutchinson

Minneapolis - Honeywell Regulator Company, Minneapolis 8, has selected **F. W. Hutchinson**, radiant panel heating authority, as consultant.

The new consultant has been engaged in connection with Honeywell's large scale test program in order to help determine proper methods of controling radiant panel heating in all types of buildings.

Hutchinson is helping Honeywell engineers in the preparation of a manual on the theory and application of radiant panel heating controls, expected for publication in the fall.

The company has been carrying on test and experimental work on the subject for more than five years and already has developed a number of basic control systems which have demonstrated the practicality and efficiency of radiant panel heating when properly installed and properly controlled.

Hutchinson has spent the last ten years in research on panel heating. His studies included three years of work in nine countries of Europe where he surveyed more than 1,200 installations. Among the buildings equipped with radiant panel heating which he studied were the Nazi party headquarters and the Bank of England.

Hutchinson is a member of the National Council of the American Society of Heating and Ventilating Engineers.

◆

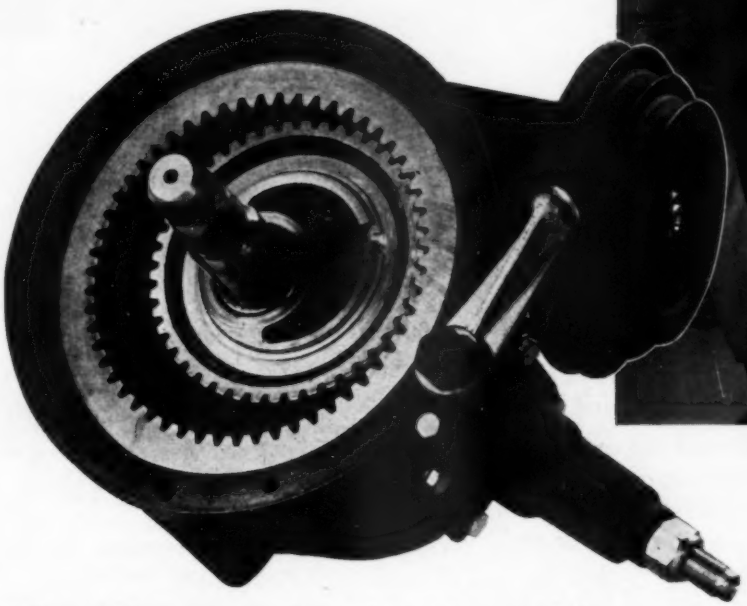
Eric E. Sommer, sales engineer with **The Linde Air Products Company**, new products division, was one of the victims of the disastrous fire which swept the La Salle Hotel in Chicago early on June 5. His home was at 52 Fernwood Road, Larchmont, N. Y. He was 34 years old.

Mr. Sommer was born in Hove, England in 1912. He is survived by his wife, Nancy, his three-year-old daughter, Barbara, his parents, Mr. and Mrs. Emil Sommer of 176 Southampton Street, Buffalo, N. Y., and a sister, Mrs. Frank James of Huntsville, Alabama.

◆

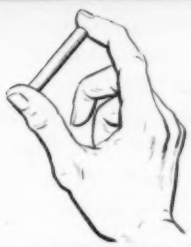
Russell B. Landis has joined the **Union Manufacturing Co., Inc.**, Boyertown, Pa., and will handle sales of Penn-Aire cast iron, gravity furnaces in the territory east of the Mississippi and north of the Mason and Dixon line.

Everything that leads to a SALE!



A sensational demonstration of extra power!

Watch your prospect's face when he sees a 2 x 4 chewed into matchwood or a hard rock smashed in the Crusher Block opening of a Winkler. You'll know you have the sale clinched then and there—*because that's a demonstration anyone can understand* and appreciate! It's dramatic proof of the complete superiority of the famous Winkler *Fully Automatic* Transmission. It reveals the *extra power* which enables a Winkler to operate under conditions which ordinarily mean a breakdown — shows why a Winkler gives unfailing service for years on end.



No Shear Pin!

You'll have no shear pin grief with a Winkler —*because there is no shear pin.* Full protection against a breakdown which might be caused by an uncrushable object in the coal is provided by the Winkler Automatic Safety Release.

Thorough training in stoker merchandising!

To assure the success of its distributors, the U. S. Machine Corporation has established an amazingly comprehensive training course. In a completely equipped laboratory, Winkler distributors are thoroughly schooled in every phase of stoker merchandising, installation and service.

Sales tools!

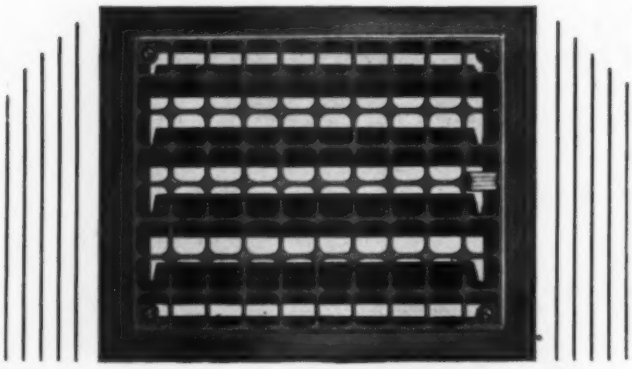
Winkler Distributors have access to the most complete line of selling tools in the industry! Winkler merchandising methods—*proved the country over*—offer a guide to your sales potential . . . provide a Basic Business Set-up and Control for profitable operation . . . personnel development . . . consumer prospecting . . . all supported with a 2 for 1 Advertising Bonus Plan and material to do a complete job. Winkler Distributors are set up to make money from the start!

Winkler Domestic Hopper Model

WINKLER

fully automatic STOKERS

U. S. MACHINE CORPORATION, Dept. R-6, LEBANON, INDIANA



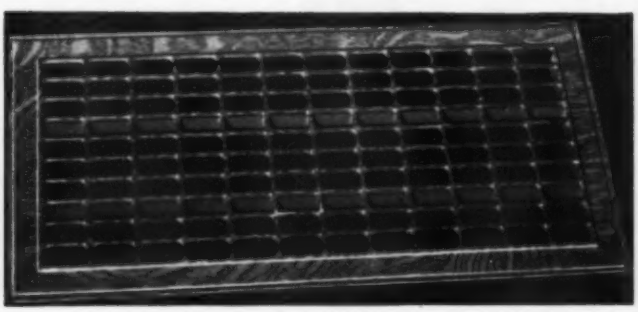
H&C NO. 200 STEEL FLOOR REGISTER
Made in 6x8, 8x10, 8x12, 9x12, 10x12, 12x14.
Finishes: Black and Oak.

For Earlier Delivery

of Floor Registers and Return Air Faces, and particularly for all G.I. Housing Projects, we earnestly recommend that you specify our Nos. 200 and 255 in the sizes shown herewith, instead of our Nos. 210 and 265.

For all functional purposes Nos. 200 and 255 are fully equal to any Floor Registers and Returns on the market; and since they can be produced in far greater volume than Nos. 210 and 265, it is to the advantage of all concerned to use Nos. 200 and 255 during this critical period when demand throughout the industry is considerably in excess of the ability to supply.

Sizes called for by the Register Standardization Program of the National Warm Air Heating and Air Conditioning Association are clearly indicated for all items in our new No. 46 Catalog. Ask your jobber for a copy or write to us if you do not have one.



H&C RETURN AIR FACE NO. 255
Made in 6x30, 8x30, 10x24, 10x30, 12x14, 12x24, 12x30, 14x30, 16x30, 18x30, 20x30. Finishes: Black and Oak.

H&C

HART & COOLEY MANUFACTURING CO.

World's Largest Manufacturers of Registers, Grilles, Furnace Accessories

HOLLAND • MICHIGAN

With the Manufacturers

Holly in Modern Home

Holly Manufacturing Company, Pasadena, California, announces completion of their new modern factory building at 875 South Arroyo Parkway.

The new plant, now in full operation, comprises 33,000 sq. ft. of floor space and houses both the general offices and all manufacturing facilities. Since breaking ground, Holly ordered the size of the originally planned factory enlarged one-third and the present structure has provision for further expansion.

◆

George Hajek, for 12 years sales engineer for **Ceco Steel Products Corporation**, 5701 W. 26th St., Chicago 50, has been appointed manager of the Dallas, Texas sales district. He replaces **J. C. Boyce.**

Before joining the Chicago office of Ceco in 1926 as a draftsman, he was with the Illinois Power and Light corporation in the same capacity. In 1934 Mr. Hajek was transferred to Ceco's sales division as sales engineer.

H&C DAMPER REGULATOR SETS

ECONOMY TYPE. For use with splitter or regular dampers on either round or square duct. Snap Bearing permits small dampers to be installed without bending. Handle rotates in complete circle, permitting installation in any position. Handle always indicates position of damper. (Patent 2,146,142.) Wing Nut holds damper securely in any position. Individually packaged.

LIST PRICE.....No. 40¼.....$0.30

BRACKET TYPE. Nut holds damper securely, preventing vibration. Handle which indicates position of damper, may be left in place permanently or removed after adjustment (to prevent tampering). Snap End Bearing on ¼" size, Solid Bearing on ⅜" size. Each set individually packaged. Rust-proofed.

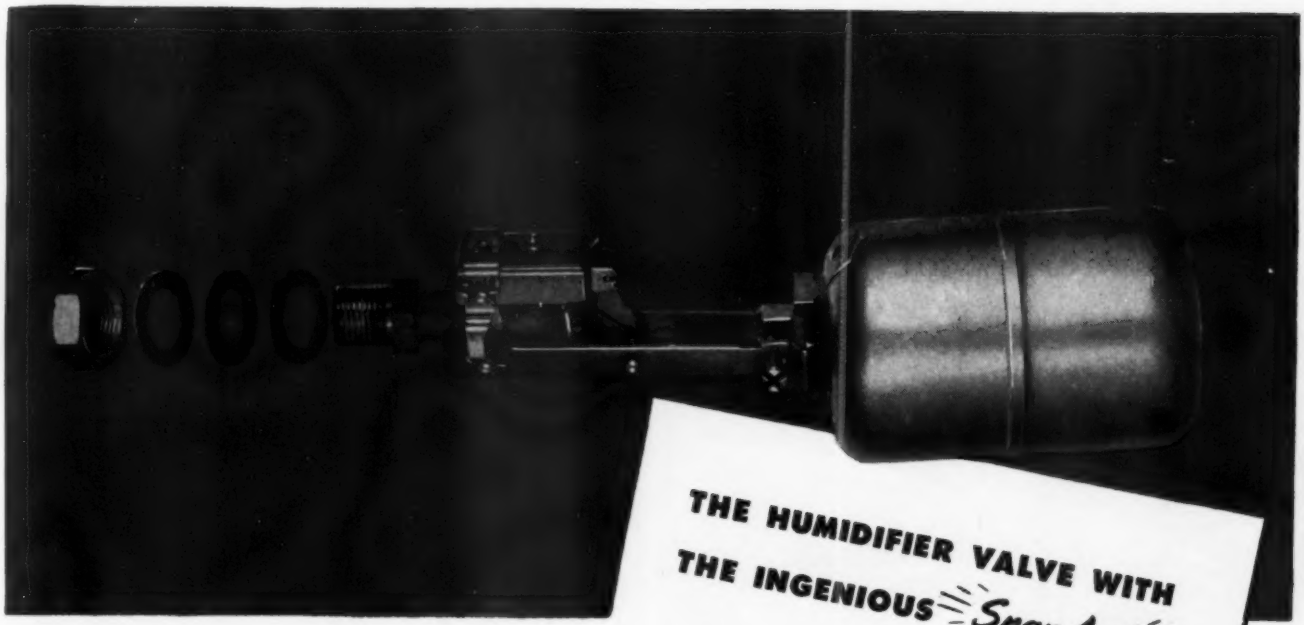
LIST PRICES.....No. 50¼.....$0.40
No. 50⅜.....$0.60

DISK TYPE. Like all H&C sets, this set is equally adaptable to splitter or regular dampers. Snap End Bearing on ¼" size, Solid Bearing on ⅜" size. All parts are rust-proofed. Complete set in carton.

LIST PRICES.....No. 80¼.....$0.40
No. 80⅜.....$0.60

See your jobber or write for literature and sample.

HART & COOLEY MANUFACTURING CO.
HOLLAND, MICH. • PHILADELPHIA OFFICE



THE HUMIDIFIER VALVE WITH
THE INGENIOUS *Snap Action*

A better valve that is being made still better—

We realized that we were biting off a big chew when we started to make humidifier float valves. But, frankly, we didn't know how tough it was to be until we got all the way into it.

As you know, the conventional float valve just couldn't do this vital job right. Plainly, a valve was needed that could (1) cope with the foreign matter, lime and scale that are always present in humidifier pans, (2) seat tight against water pressures up to 150 lbs., (3) have provision for water level adjustment on the job.

To accomplish these things, we designed a snap action valve—a valve that snaps wide open when the float drops ¼-inch, opening up a full stream which flushes out the valve and seat; then closes with the same snap when the water level is restored, seating tight against water pressures up to 150 lbs. The adjustable water level was provided too, and many other refinements that reflect unparalled experience in the manufacture of water level controls.

The result was a far better valve, but, as we said at the start, there was still room for improvement. We first added a strainer, then changed valve details and float construction. During the war thousands were given severe work-outs in special applications that showed the way to further improvement. Soon this valve will again be available to you—a better valve, and, equally important, a valve that is being made ever better!

THE McDONNELL No. 417 Snap Action Valve is illustrated above. The No. 517, consisting of the No. 417 Valve installed in a die cast float chamber with cover, is shown below. Valves are adaptable to every type of warm air furnace.

McDONNELL & MILLER, Inc.
1318 Wrigley Building, Chicago 11, Illinois

Doing One Thing Well
REG. U. S. PAT. OFF.

McDONNELL *Snap Action* FLOAT VALVE

Leadership

THAT MEANS

Greater Stoker Sales for You!

PIONEER OF THE STOKER INDUSTRY . . . ONE OF THE LEADERS IN NATIONAL SALES VOLUME!

FREEMAN

LONG-LIFE **STOKERS**

FIRST CHOICE OF AMERICA'S FOREMOST HEATING ENGINEERS

In selecting the stoker line you want to sell, give yourself the competitive advantage of Freeman's established leadership . . . strengthen your own business with the same vital assets which have helped make Freeman strong. Get the facts now. See how Freeman offers you a complete line up to 1200 pounds per hour capacity . . . sound engineering backed by research and testing . . . years of experience dating back to the pioneer days of the industry . . . the security and protection of a financially strong manufacturer who will always be in the stoker business to serve you . . . the unequalled assistance and cooperation of the foremost plumbing and heating distributors in the country . . . aggressive promotion, including an expanding program of national advertising and dealer helps!

FREEMAN STOKER DIVISION
ILLINOIS IRON & BOLT CO.
918 S. MICHIGAN AVE., CHICAGO 5, ILLINOIS

With the Manufacturers

E. T. Howard

E. T. Howard, for the past 11 years sales manager for **General Controls Company** of Glendale, Calif., has been named general sales manager of **Fraser & Johnston Co.** of San Francisco.

Mr. Howard has traveled the nation for twenty years, calling on men in the heating and air conditioning field. He is a director of the Pacific Coast Gas Association, and general chairman of its manufacturing section. He is also a director of the national Gas Appliance Manufacturing Association.

Eddie Howard will head up Fraser & Johnston's accelerated national sales program. The firm produces Biltwel and Toridaire gas furnaces.

At the same time, Fraser & Johnston announced that **Alec Easton**, formerly assistant sales manager for Ray Oil Burner Co. and more recently a major in the U. S. Army connected with the Chemical Warfare Service, will serve as assistant sales manager of the firm.

◆

Utility Appliance Expands

Utility Appliance Corporation, 4851 S. Alameda St., Los Angeles, manufacturer of evaporative air coolers, fans, blowers and gas-fired heating equipment, announces the purchase of Gaffers & Sattler, Los Angeles, and Occidental Stove Co., Irvington, Calif. The newly acquired plants will be operated as divisions of Utility Appliance Corporation, with existing production and sales organizations.

Executive and administrative operation will be consolidated in the Utility organization, but each devision will continue to produce former product, under existing brands. Engineering facilities will be strengthened by

Ben B. Breslow continues as president of Utility Appliance Corporation and Maurice Breslow as vice president. George A. Sattler joins the board of directors, which also includes H. A. Goldman, Utility treasurer, Bernard Harris, secretary of the company, Leo Hungerford and Henry M. Bateman.

Utility Appliance Corporation is successor to the business started in 1925 by Ben Breslow, and now occupies Los Angeles factories with an aggregate floor space in excess of five acres. The Utility products are distributed nationally through the company's own sales organization and representatives, to distributors and dealers.

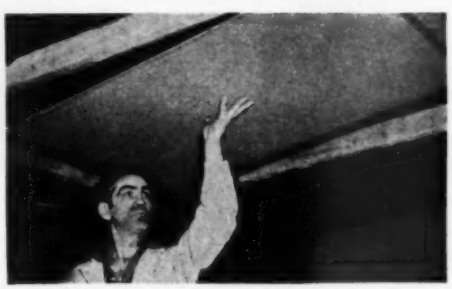
DUCT WORK for VETERANS' HOMES

New Homes for Veterans built by aggressive contractors using A.R.A. Sheets for duct work is now common practice—and no better non-metal duct work can be made than from A.R.A. SHEETS—tested, approved and pronounced the most satisfactory sheet on the market. DUCT WORK for Veterans' New Homes is a necessity.

Asbestos-clad A.R.A. Sheets are tough yet flexible (Mullen-tested over 200 lbs. per sq. in.)—rigid but not brittle — fire-proofed and water-proofed — are light in weight, will not dry out, crack, crumble, or chip, have a high insulating value (K.45 B.T.U.) and good sound-deadening properties.. They are easy to handle, will bend without breaking and can be rolled, punched, scored and die cut, still retaining their rigidity and strength.

Keep an ample supply of these nationally known, easy working sheets in stock for fabricating duct work of every type. Don't wait until the last minute for any kind of sheets in this changeable market.

CARTON CONTENTS 20 SHEETS 33"x48"



A.R.A. Sheets are easy to handle

ORDER FROM YOUR JOBBER TODAY.

Write for Our 16-Page Booklet No. 89-A. No obligation, of course.

GRANT WILSON, INC.

141 WEST JACKSON BLVD. AT LA SALLE ST. CHICAGO 4, ILL.
22nd Floor, Board of Trade Bldg. Phone Wabash 8220

just say

"Evap-O-Matic"

--and you've said it all!

COMPLETELY CONTROLLED EVAPORATIVE COOLING

just the flick of a switch

--the poor man's cooling system!

Now you can tell it to your customers... how to revitalize their business... how to meet air-conditioned competition, at low initial cost and with little upkeep! Yes, we mean EVAP-O-MATIC—the last word in evaporative cooling. If you would know more about this sensational new development —write for full details. The result of 21 years of evaporative "know how".

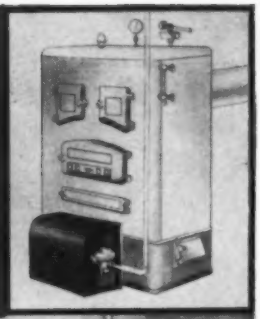
1st GREAT NATIONAL

IN DESIGN
IN PERFORMANCE
IN EVAPORATIVE "KNOW HOW"

AIR CONDITIONING CO.

2125-29 No. Harwood St. Dallas, Texas

Here's How
YOU CAN MAKE MORE MONEY
Right Now!



Install
ADAMS
Deluxe Model
CONVERSION GAS BURNERS

Quickly and Easily Installed in any Existing Furnace or Boiler.

2 OUT OF 3 HOMES ARE PROSPECTS — This is a conservative estimate in normal times. With the impending coal shortage, this ratio will be greatly increased. We are all set to break our National Advertising Campaign and this is your opportunity to tie-in with our merchandising plan.

ONLY THE ADAMS DEALER *Gets All this Sales Assistance.*

EXCLUSIVE FRANCHISED TERRITORY

Protection on all Inquiries, No Factory-Consumer Sales.

The Adams National Magazine Advertising Program.

Co-op. Local Newspaper and Radio Advertising.

Special Display Model.

FREE Sales Literature and Selling Kit.

Factory-backed, 36 Month Warranty.

ONLY THE ADAMS CONVERSION GAS BURNER *Has All these Competitive Advantages.*

Rugged, Longer Lasting, Portable Burner complete with all AGA approved Controls.

Magic Dial Room Thermostat for "Tuning" heat out-put to heat-loss.

Noiseless, Electric, Hydraulic type Valve with Manual Control.

Unique, Brass, Combination Needle Valve and Orifice for micromatic control of gas supply to fit any size home.

Burner Tested and Passed by the American Gas Association for use with Natural, Mixed, or Manufactured Gas.

Specially developed Refractory retains heat longer . . . means greater economy.

Greater Heat Range . . . from 85,000 to 335,000 BTU per hour.

Thirty-six Month, Factory-backed Warranty.

Get all the Facts . . . Choice territories are still available for alert, progressive dealers. Write, wire or phone for complete details on the ADAMS FRANCHISE . . . there's no cost or obligation.

SEND THIS COUPON TODA

ADAMS CONVERSION GAS BURNER

"Best by Heat Test"

THE ADAMS MANUFACTURING COMPANY
Cleveland 3, Ohio

The Adams Manufacturing Co.
1363 East 47th St.
Cleveland 3, Ohio

Gentlemen: Without cost or obligation to me, send me complete details on the ADAMS FRANCHISE.

Name _____ Address _____

City _____ Zone _____ State _____

With the Manufacturers

Osborn Changes Name to Milcor

On July 1, 1946 the J. M. & L. A. Osborn Company, one of the oldest sheet metal manufacturers in the country, changed its name to Milcor Steel Company. The Osborn Company, located at Cleveland with branch warehouses in Buffalo, Detroit and Cincinnati, was purchased by Milcor in December, 1944, and since then has been operated as a division of Milcor Steel Company. With the unification of procedures of the two companies completed, Osborn now becomes a part of the Milcor organization with home offices in Milwaukee, Wisconsin.

In addition to the former Osborn branches, Milcor has its main plant and offices at Milwaukee and branch warehouses at Baltimore, Chicago, Kansas City (Missouri), Los Angeles and Rochester. Milcor products handled at all of these branches include fireproof buildnig materials, heating and ventilating equipment, rain carrying equipment, and sheet metal specialties.

Along with improved service, the pooling of experience of the two concerns will lead to further product improvements and expansion of the various lines.

There has been no change in sales personnel. District sales managers are: Donald L. Rossiter, Cleveland; Joseph W. Kuhl, Cincinnati; Carl F. Gruenert, Detroit; and A. E. Kirchgraber, Buffalo.

◆

Perfex Opens Branch Offices

The Perfex Corporation of Milwaukee, manufacturers of automatic temperature controls, opened branch offices at Cleveland and Detroit on May 15.

In charge of the Cleveland branch, located at 2010 E. 102nd St., is **Charles M. Campbell,** who joined Perfex in 1944 as sales engineer.

The Detroit office at 9545 Grand River is under the supervision of **S. David Horner.** Horner spent three and one-half years in the navy, and received his honorable discharge as Lieutenant Commander just prior to joining Perfex in January, 1946, as sales engineer.

Left: S. David Horner

Right: Charles M. Campbell

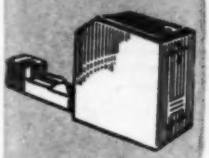
◆

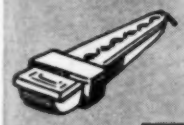
The Herman Nelson Corporation of Moline, Illinois announced several changes in personnel and additions to their sales staff: **C. R. Anderson,** formerly advertising manager, has joined the Philadelphia branch office in the capacity of products application engineer. **W. M. Walterskirchen** is the new product application engineer in Missoula, Montana, and **Norman Omodt** is enrolled in a sales training course at the home office, before entering the sales field.

With the inclusion of these three new engineers the sales force of the Herman Nelson Corporation now includes fifty-six men in a network covering the United States.

Mr. Anderson's position as advertising manager is now being filled by **R. E. Froeschle** who has returned after two and one-half years in the Navy.

PREMIER Plans A Secure Future for the Independent Furnace Dealer





Yes, PREMIER is looking beyond today's production difficulties—is planning and preparing NOW to give you the improved furnaces and air conditioners, the expanded factory cooperation that you'll need in ***tomorrow's*** market.

PREMIER engineers are tooling up on new units that will be far in advance of anything previously available — equipment that will help the Independent Furnace Dealer meet and beat tomorrow's toughest competition.

PREMIER specialists are likewise creating new sales and advertising helps for you, preparing for the expansion of the field engineering service, and developing other improved forms of factory cooperation.

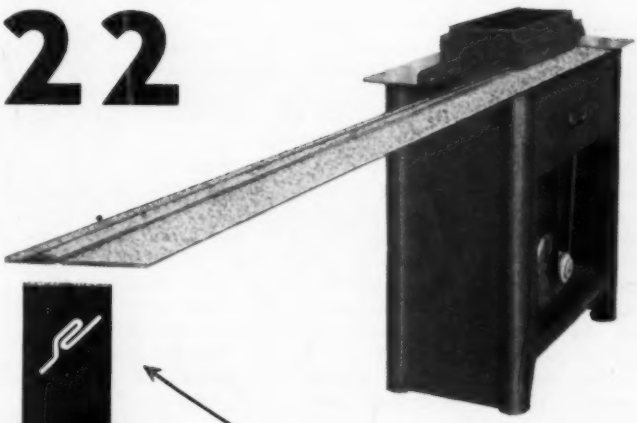
In the future as in the past, we are determined to make the PREMIER Exclusive Franchise the Independent Dealer's best assurance of prosperity and security.

PREMIER FURNACE CO.
Dowagiac, Michigan

PREMIER

The Year 'Round Line

LOCKFORMER 22



PITTSBURGH
DOUBLE SEAM
DRIVE CLEAT
RIGHT ANGLE

The Lockformer 22 is also available with Power Flanger Attachment (not illustrated). Model number indicates gauge capacity.

EASY EDGER

No Gauges to set—turns up Flanges in one operation.

Turns a straight right angle 7/32" high, minimum radius 3", on 20 gauge and lighter. One piece heavy frame, completely enclosed, with direct drive to upper shaft. Adjustable laterally and vertically, no special tool needed. Available with or without steel stand.

The most useful, hand-operated tool especially designed for the sheet metal, air conditioning and ventilating shop.

THE LOCKFORMER CO.
4615 ARTHINGTON STREET • CHICAGO 44, ILLINOIS

With the Manufacturers

The Ruberoid Co., 500 Fifth Avenue, New York 18, has obtained a site of approximately 37 acres and awarded a contract for the construction at West Dallas, Texas, of a plant for manufacturing asphalt and asbestos-cement roofings and sidings and allied building products, costing in excess of $1,000,000 and is expected to provide employment for about 400 persons.

The plant will be located on Eagle Ford Road, running between Dallas and Fort Worth. The main building will be approximately 100 feet wide and 800 feet long. It is expected that the plant will be in operation some time in 1947. A district sales office will be established in connection with the Dallas plant. The company has already substantially increased its productive capacity in the South by completing this month the construction of an additional factory unit at its Mobile, Ala., plant, which will more than double the output of asbestos-cement products at that point.

◆

Appointment of **Thomas G. Franzreb** to the Technical Service Division Staff of **Turco Products, Inc.**, is announced.

"Tom" is located at Turco Products Los Angeles office, 6135 South Central Avenue, Los Angeles 1, and will be available at all times to assist in solving maintenance problems.

Mr. Franzreb has done post-graduate work in the field of chemistry at Columbia University. Entering the Navy in 1944, he spent two years as Materials Laboratory Officer in the Engineering Division at Jacksonville, Florida. He was released from active duty in April, 1946, with the rank of Lieutenant in the Naval Reserves.

The Victor Furnace Company, of Salem, Missouri has been purchased by J. LeRoy Farmer, of Cedar Rapids, Iowa. Mr. Farmer is at present owner of Canning Factories in Iowa, a large hemp mill in Beaver Dam, Wisconsin, and operates several farms near Cedar Rapids.

Mr. Farmer has engaged C. M. Selby, of Michigan, as general manager of the business. Mr. Selby has had many years of experience in the furnace business as production manager, sales and development. Mr. Selby has already located in Salem, and takes over management at once.

The same personnel will be retained at the plant, and the new owner will manufacture furnaces, septic tanks oil supply tanks, etc., and do general installation work as well as manufacturing.

◆

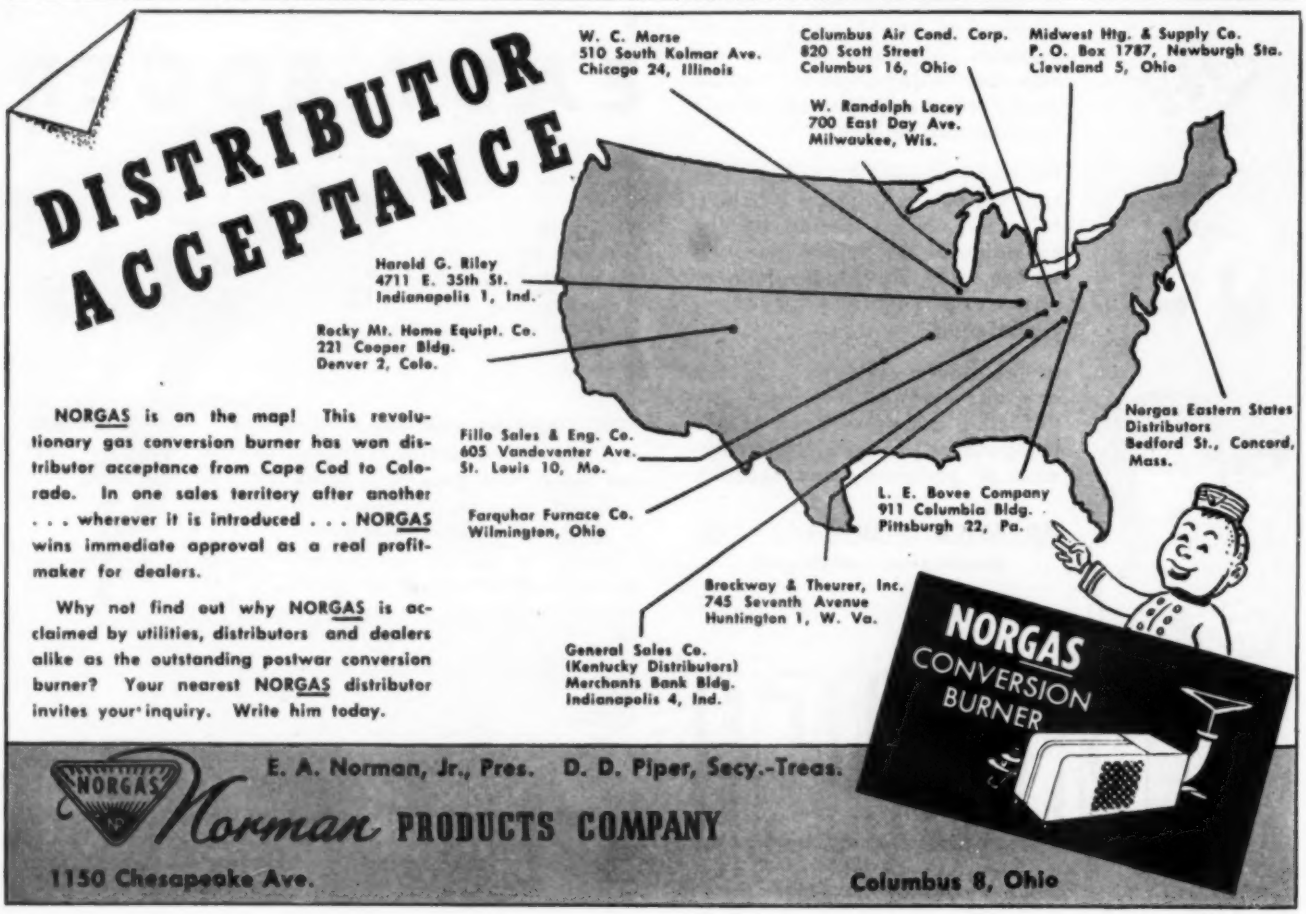
The opening of a new branch office in Pittsburgh has been announced by the **Herman Nelson Corporation**, Moline, Illinois. This branch office becomes No. 13 in a nation-wide chain. It will be in charge of **Gale Heslop** as general product application engineer. Mr. Heslop was formerly connected with the Washington branch office operating out of Baltimore. **J. M. Osborne**, general production application engineer will be in charge of the Washington Branch Office.

Another change finds **Coleman J. Kane** taking charge of the New York branch office as general product application engineer.

◆

John W. Anderson, until recently assistant manager of the Birmingham, Alabama, office of **Ceco Steel Products Corporation**, has been appointed manager of the firm's Oklahoma sales district. He replaces **R. K. Alexander**, who has been placed in charge of Ceco's sales office and warehouse in Houston, Texas.

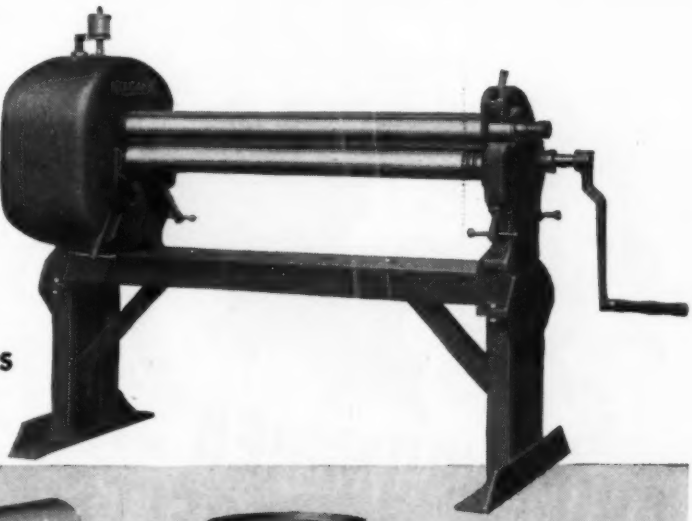
Mr. Anderson joined the Ceco organization in 1938, after having spent three years with Construction Products company of Omaha, Nebraska.


DISTRIBUTOR ACCEPTANCE
W. C. Morse
510 South Kolmar Ave.
Chicago 24, Illinois
Columbus Air Cond. Corp.
820 Scott Street
Columbus 16, Ohio
Midwest Htg. & Supply Co.
P. O. Box 1787, Newburgh Sta.
Cleveland 5, Ohio
W. Randolph Lacey
700 East Day Ave.
Milwaukee, Wis.
Harold G. Riley
4711 E. 35th St.
Indianapolis 1, Ind.
Rocky Mt. Home Equipt. Co.
221 Cooper Bldg.
Denver 2, Colo.
NORGAS is on the map! This revolutionary gas conversion burner has won distributor acceptance from Cape Cod to Colorado. In one sales territory after another . . . wherever it is introduced . . . NORGAS wins immediate approval as a real profit-maker for dealers.
Why not find out why NORGAS is acclaimed by utilities, distributors and dealers alike as the outstanding postwar conversion burner? Your nearest NORGAS distributor invites your inquiry. Write him today.
Fillo Sales & Eng. Co.
605 Vandeventer Ave.
St. Louis 10, Mo.
Farquhar Furnace Co.
Wilmington, Ohio
Norgas Eastern States Distributors
Bedford St., Concord, Mass.
L. E. Bovee Company
911 Columbia Bldg.
Pittsburgh 22, Pa.
Brockway & Theurer, Inc.
745 Seventh Avenue
Huntington 1, W. Va.
General Sales Co.
(Kentucky Distributors)
Merchants Bank Bldg.
Indianapolis 4, Ind.
NORGAS CONVERSION BURNER
E. A. Norman, Jr., Pres. D. D. Piper, Secy.-Treas.
Norman PRODUCTS COMPANY
1150 Chesapeake Ave.
Columbus 8, Ohio

● Sheet metal men make a great many things, including money, with Niagara Slip Roll Forming Machines.

Niagara design makes them easy to operate because the end of upper roll swings forward so that formed cylinders can be withdrawn without distortion. Upper roll opens horizontally, eliminating lifting of roll or work. Trigger release speeds up unlocking, opening and closing upper roll.

Made in various sizes and capacities,—hand and power operated.

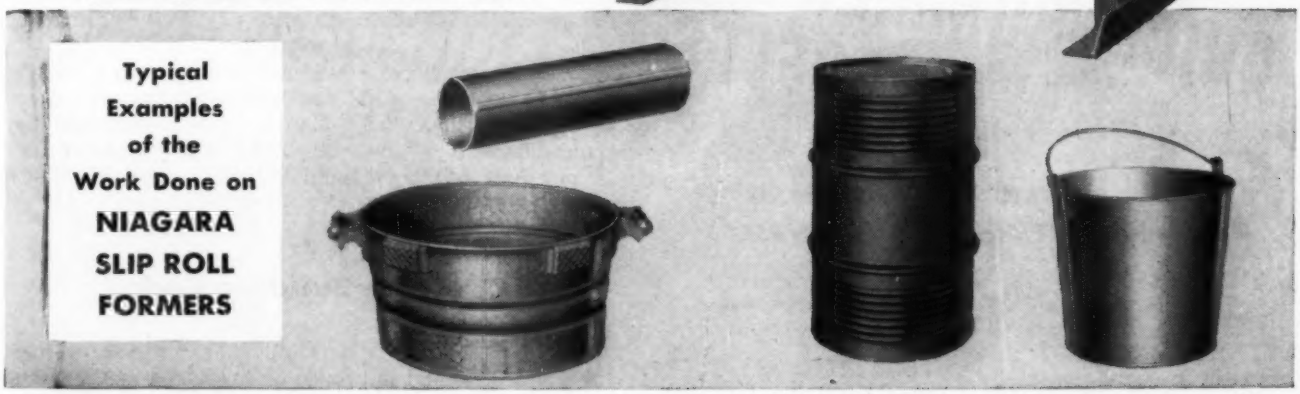


NIAGARA MACHINE AND TOOL WORKS

BUFFALO 11, N. Y.

District Offices: New York, Cleveland, Detroit

Typical Examples of the Work Done on NIAGARA SLIP ROLL FORMERS



TRIANGLE SHOCK ABSORBING PILLOW BLOCK

Designed by Triangle engineers for fans, blowers and other devices requiring silent operation, perfect alignment and self-lubrication.

Preloaded oil-proof cushion built into the bearing.
Ball-and-socket design.
Write for samples and complete information.

TRIANGLE MANUFACTURING CO.

392 DIVISION STREET OSHKOSH, WISCONSIN

QUICK SUMMER and FALL PROFITS

SELL IMPORTANT FUEL SAVINGS, NEW COMFORT TO ALL FURNACE USERS

You'll make many new friends—plus new sales and profits—by urging every furnace user, new or old—to have a new A-P DEPENDABLE Heat Regulator Set installed NOW. You'll be showing them how to save scarce fuel next winter, how to stretch short supplies for greater warmth, enjoy more uniform and healthful temperatures, greater comfort and time-saving convenience.

DEPENDABLE HEAT REGULATOR SET

The A-P Heat Regulator Set is available for steam, hot water, or warm air coal-fired furnaces. It is complete with a modern wall Thermostat, Limit Control, Damper Regulator, Transformer, and complete installation kit—pulleys, screws, conductor cable, staples, chain, and full instructions. Every unit is precision built for years of fuel-saving service—typical of all A-P DEPENDABLE Products.

WIRE OR WRITE TODAY for complete details — and for SALES HELPS: Display cards, colored presentation books, consumer folders, newspaper ad mats.

AUTOMATIC PRODUCTS COMPANY

2470 North Thirty-Second Street, Milwaukee 10, Wisconsin

DEPENDABLE *Controls*

FOR HEATING • AIR CONDITIONING • REFRIGERATION

News Summary Of the Month

(*Continued from page* 56)

Treasury Secretary Snyder is strongly opposed to any tax cuts as long as there is inflation, and will not press for any 1947 legislation. He takes the view that by keeping taxes at present levels, the government can take advantage of boom times and improve its finances.

◆

What Vets Can Pay

WAR Department Survey at Separation Centers, indicates that, among veterans who desire to own their homes, 14 per cent felt they could afford to pay more than $50 a month, 54 per cent felt they could afford to pay between $30 and $50 a month, and 32 per cent felt they could afford to pay only $30 a month or less.

The same survey shows that among veterans who desire to rent houses, 11 per cent felt they could afford to pay more than $50 a month, 55 per cent felt they could afford to pay between $30 and $50 a month, and 34 per cent felt they could afford to pay only $30 a month or less.

◆

Obsolete Building Codes

OUTMODED building codes, which prohibit the use of new and improved construction methods and materials and contain restrictive provisions that no longer serve a useful purpose, are retarding construction of housing and contributing substantially to high building costs, according to the Construction Division, Department of Commerce.

To encourage revision of the building codes, the Department's Construction Division and the National Bureau of Standards in cooperation with private groups have initiated a program of research designed to identify the nature and extent of code deficiencies which tend to or do actually increase building costs.

The long-range aim of the survey is to compile data which will be helpful in establishing a model basic code that could be adapted to local conditions.

◆

Insurance Liability

IN the June issue of "Construction," published by the Building Construction Employers Association of Chicago, Inc., H. James Murray, member of the air conditioning and ventilating firm of Mellish & Murray, Chicago, has this to say on the importance of proper insurance protection for contractors and sub-contractors:

"I suggest that all contractors explore their own Public Liability and Property Damage Insurance policies to ascertain whether they are properly covered on all present and future contracts. This is important because many persons speak carelessly of a Public Liability policy as covering the insured's legal liability, and as a consequence, on many occasions, contractors and sub-contractors have suffered heavy financial loss. The reason for this condition is that the insuring clause of almost every Public Liability covers only the liability imposed by law and not the contractor's

LIKE YOUR PROFITS HOT or COLD?

With a Palmer Team working the year round for you, you can have both.

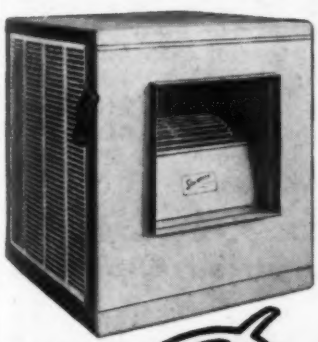
IN WINTER

Palmaire SUSPENDED UNIT HEATER

The ideal heater for the store or small factory. Hangs from the ceiling and leaves valuable floor space clear. No duct work required. Fully automatic, with built-in features that pack a knockout selling punch. Just one of a complete line of high quality gas furnaces.

IN SUMMER

SNO-BREZE EVAPORATIVE COOLERS



Perfected in Arizona, the testing ground of air-conditioning, where coolers have to be efficient to sell. Backed by 30 years of manufacturing know-how. Complete line of blower and "air-stream" fan types are available.

Write for catalog

Palmer MFG. CORP.
Phoenix, Arizona

CAN YOU AFFORD THE LABOR COST?

(OF ANYTHING BUT U. S. No. 40 SERIES)

No Substitute has been found for the No. 40 Series U. S. Gravity Baseboard. Properly attached—it accomplishes the Purposes of Dignified Appearance, Cleanliness of non-streaking not found in some other line. There is no Substitute for a Two-Piece Baseboard Register with a Removable Center.

U. S. No. 40 Series Gravity Baseboard Registers with their simplified two-piece construction—removable centers with engaging lugs—are the most efficient and labor-saving registers made. Standardizing on them will save you hundreds of dollars of extra labor cost each year and satisfied customers.

New catalogs featuring U. S. Air-Conditioning and Gravity Registers and Fittings ready soon.

UNITED STATES REGISTER CO.
BATTLE CREEK, MICHIGAN
MINNEAPOLIS • KANSAS CITY • ALBANY

This ½" Drill Cuts 3½" Holes!

The Black & Decker ½" Standard Drill is a great tool for fabrication and installation—on all types of heating, piping and air conditioning work. Has a capacity up to ½" diameter in steel, double in hardwood. Drives Black & Decker Hole Saws for cutting clean, round holes up to 3½" diameter in cast iron, sheet metal, porcelain, alloys or any material a hacksaw will cut.

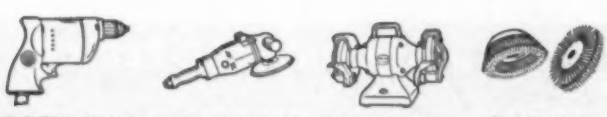
The same Drill drives wire wheel brushes and wheels for occasional light cleaning, grinding and sharpening jobs—and can be slipped into a Black & Decker Drill Stand for heavy duty drill press work.

Order now from your Black & Decker Distributor, or write to: The Black & Decker Mfg. Co., 682 Pennsylvania Ave., Towson 4, Md.

LEADING DISTRIBUTORS EVERYWHERE SELL

Black & Decker

PORTABLE ELECTRIC **TOOLS**



ELECTRIC DRILLS ELECTRIC SANDERS BENCH GRINDERS WIRE BRUSHES

legal liability. The explanation of the insurance companies is contained in one of their bulletins as follows:

Liability In Two Parts

"Legal liability for personal injury or for property damage, meaning, in general sense, any situation under which one person may be compelled by law to pay damages to another, is divided into two major parts:

"Legal liability imposed by law.—This embraces the usual liability situation where one party, because of negligence, breach of duty, etc., is compelled by the operation of common law to reimburse another for damage. This liability, and nothing else, is covered by the usual Public Liability policy.

"Liability assumed by contract.—This condition exists where one party has agreed with another to be liable under certain conditions, over and above the liability imposed upon him by law. It is legal liability—since it can be enforced in a court—but it is not liability imposed by law. It is specifically excluded in most Public Liability forms.

"We have felt, and I am sure that many other members of our association have been under the impression that our Public Liability, and Property Damage policies covered not only our own operations, but also covered the owner, the architects and the engineers, or any other person defined in the specification or with whom we signed a contract for work. This, as can be readily seen from the above explanation, is not so.

"We have found that insurance companies have a method of assuming this type of liability through what is known as Contractual Liability Insurance. With such a form of insurance in force the protection became automatic. It can be made a part of a contractor's insurance program at a very nominal cost."

◆

Insulation Board Shortage

A COMMITTEE consisting of J. A. Piper and James McCawley recently called on officials of CPA and OPA to determine what can be done to increase production of insulating board for roofing. The committee was advised by CPA that production has been fairly stable at 1,800,000,000 feet per year for six years (500,000,000 feet of this total going into insulated brick, steep siding, etc.) and that no increase may be expected until several new plants are put in production. CPA sees no relief or change in the volume of glass insulation or cork.

OPA advised that manufacturers have been concentrating their distribution in areas close to their plants so OPA may make price adjustments to broaden the distribution. Action is looked for.

◆

Committed Construction Approved

RELIEF for persons who formerly could not proceed with construction of a home on which previous commitments had been made and who were unable to obtain priorities under orders and regulations of the Veterans Emergency Housing Program is afforded in a new regulation NHA Regulation No. 80-2, which permits authorizations and priorities assistance to veterans of World War II and members of the Armed

CEILING INSTALLED
for double Efficiency

WARM grease from cooking—smoke and liquor fumes from the gameroom—steam from bath and laundry—all *naturally* rise to the ceiling. By installing Blo-Fan Ceiling Ventilators you take advantage of this law of nature. You capture nearly 100% of unwanted air before it can spread to soil walls and furniture.

Blo-Fans combine both blower and fan principles. They have ***power plus volume***. They are twice as effective as any other fan of similar size installed in a side wall . . . Low in cost, Blow-Fans should be included in every G. I. home or apartment.

Blo-Fan CEILING VENTILATORS

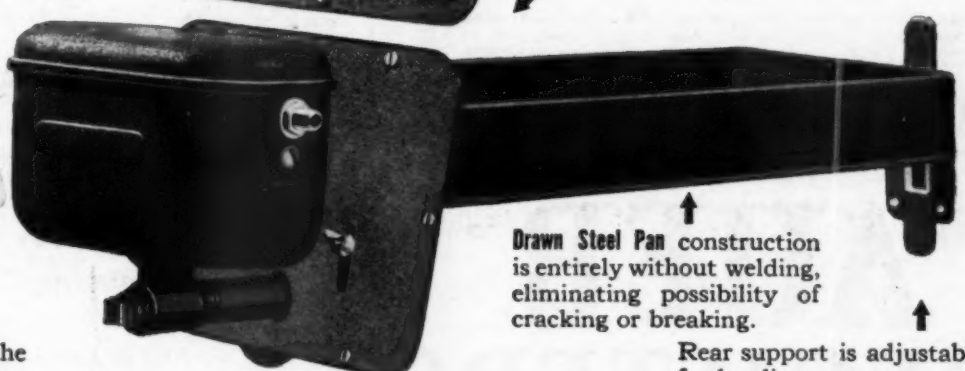
PRYNE & CO., INC.
LOS ANGELES 54, CALIFORNIA
BRANCHES • NEW YORK • CHICAGO • HOUSTON • SAN FRANCISCO

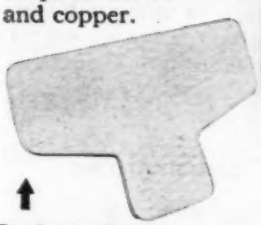
NEW SKUTTLE
Automatic Humidifier SERIES 500

Large Inspection Door and frame may be mounted at any location on the furnace bonnet.

Adjustable Collar will fit either sloping or vertical bonnets.

Water Tank and valve assembly are constructed of pure brass and copper.





For Greater Humidity, use the No. 590 Vapoglas plates with the series 500 Humidifier.

Drawn Steel Pan construction is entirely without welding, eliminating possibility of cracking or breaking.

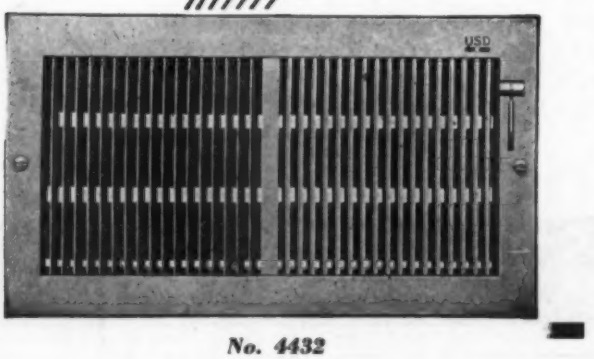
Rear support is adjustable for leveling purposes.

Length of pan sizes are 12", 16", 20", 24", and 28".

517 E. LARNED — Skuttle Mfg. Co. — DETROIT 26, MICH.

4-WAY DIRECTION *in a medium-priced* REGISTER

AIRO-FLEX "4000" Line



No. 4432

Here is a simple, sturdy, economical air conditioning register with *complete* air control.

Auer Airo-Flex Registers provide effective 4-way directional flow. Multi-louvre back blades control up-and-down flow, and indicator on face shows position of blades. Hand lever operates readily, but holds deflectors permanently in position. Vertical grille bars are easily adjustable for straight or sideway deflection with turning tool. The Airo-Flex design has all adjustable features of many higher priced registers. Furnished for wall or baseboard use with matching intake.

Many other types of Auer registers for both air conditioning and gravity systems shown in Auer Register Book, sent on request. For flat stamped metal grilles, ask for Grille Catalog.

THE AUER REGISTER COMPANY
3608 Payne Avenue Cleveland 14, O.

AUER REGISTERS & GRILLES

For Air Conditioning *and* Gravity

Forces who purchased a home site prior to April 13 and who had made one or more previous commitments such as the payment of architect's fees, obligating himself under a construction contract, clearing or grading the land or purchasing materials, for construction of a house which would have a sales price in excess of $10,000. These applications must be filed within 60 days of the effective date of the regulation, April 29.

In the case of a non-veteran who had acquired a home site, made one or more commitments for the purpose of construction, and owned all or substantially all of the materials required for construction prior to March 26, an authorization without priorities assistance may be issued.

Authorizations without priorities assistance may also be issued to persons who had contracted to purchase prefabricated or precut houses which were in process of manufacture on March 26. Applications for both conventional and prefabricated construction must be made within sixty days of the effective date of the order.

◆

Veterans Advisory Council

NATIONAL officers of leading veterans' organizations have met with Wilson W. Wyatt, National Housing Expediter in the first session of the NHA's Veterans Advisory Council, formed to give the ex-servicemen's slant on problems arising from the Veterans Emergency Housing Program.

The Veterans Advisory Council:

(1) Proposed to stimulate building trades apprenticeship programs by calling for Joint Management-Labor Apprenticeship Committees where they do not already exist and by interesting their own memberships in the long-term advantages of learning construction crafts.

(2) Served notice that, through their local chapters, they would demand "genuine" veterans' representation on local Mayors' Emergency Housing Committees—"not just someone who happens to wear a veteran's button but whose real interest may not be to represent the veterans."

(3) Told Mr. Wyatt that, in cases of veterans with very large families requiring extra-bedroom homes, they favored granting permission to build homes "slightly" over the $10,000 ceiling where sufficient space cannot be obtained otherwise in areas of especially high construction costs.

(4) Suggested that in cases where a state might have to exercise "eminent domain" and remove houses in the way of essential highways or other public construction, authority be granted to home-owners to move and rehabilitate their homes, even though such home-owners be non-veterans.

◆

Need Housing Conversions

OWNERS of single-family houses who want to convert their properties into duplex or multi-family dwellings for veteran's occupancy may secure preference ratings for the materials necessary by applying to a field office of the FHA. The application need not specify a maximum sales price or rent for the whole property if the owner or a continuing tenant will occupy one dwelling unit. The application must set a

Economical THERMOSTAT SETS

For NATURAL and MANUFACTURED GAS

Finely engineered, field proved packaged sets for compact inventory and convenient installation. Ideally adaptable to gas-fired boilers, floor furnaces, conversion burners and warm air furnaces.

Set includes type K-3B two-wire gas valve, T-70 Metrotherm, transformer and 30 feet of cable.

ADAPTABLE TO L. P. GASES

100% shut-off is assured by the additional installation of an MR-2 electro magnetic thermovalve with 26-R Series pilot burner.

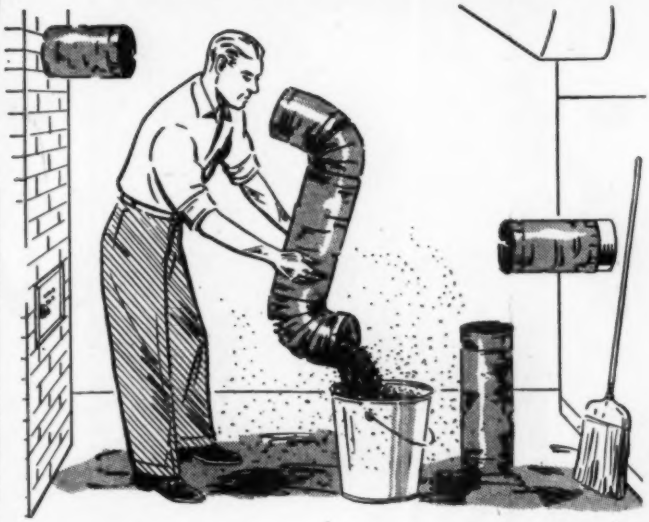
Write for Catalog 52B and Manual FI-101.

GENERAL CONTROLS
801 ALLEN AVENUE GLENDALE 1, CALIF.

FACTORY BRANCHES: PHILADELPHIA • ATLANTA • BOSTON • CHICAGO • DALLAS KANSAS CITY • NEW YORK • DENVER • DETROIT • CLEVELAND • PITTSBURGH HOUSTON • SEATTLE • SAN FRANCISCO • DISTRIBUTORS IN PRINCIPAL CITIES

14—2

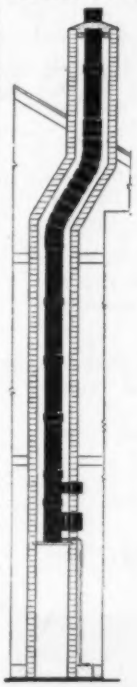
IS THIS NECESSARY?



VITROLINER BREECHING PIPE

ELIMINATES THE EXPENSE AND BOTHER OF FREQUENT REPLACEMENT

VITROLINER is a new breeching pipe for connecting heating plant to chimney. VITROLINER BREECHING PIPE will give many years of trouble-free service. A complete line of fittings makes any hookup possible and can be easily and quickly installed. VITROLINER eliminates the fire hazard of corroded pipe. VITROLINER is made of heavy gauge steel completely coated inside and outside with porcelain to prevent corrosion. VITROLINER'S porcelain finish is attractive and adds to the beauty of any room.



SPECIAL FEATURES: The Telescope section is adjustable in length and is used to fill in any odd length now accommodated by standard lengths. The Vitroliner damper section has a cleanout hole covered with a sliding sleeve.

VITROLINER CHIMNEY LINER

VITROLINER is an acid resisting chimney lining which can be installed in existing chimneys, easily and quickly. VITROLINER prevents chimney deterioration caused by acids in the flue gases. VITROLINER will catch the acid condensate and drain it away with no harm to the brickwork.

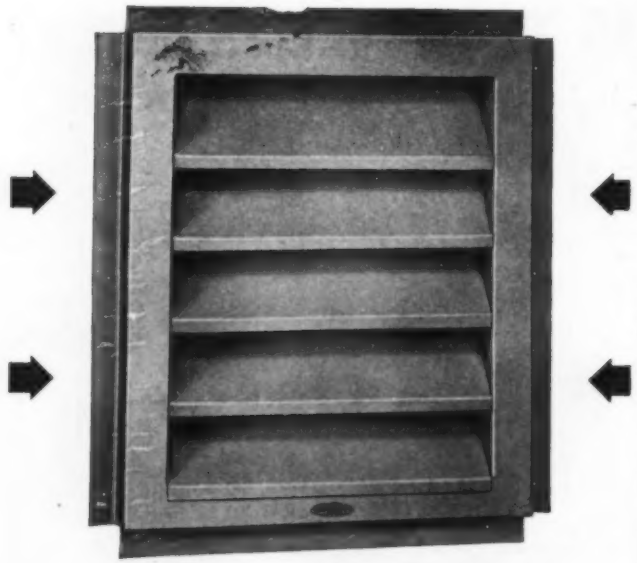
VITROLINER has been used for the past 16 years and is proven thru a long field record.

VITROLINER chimney lining is heavy gauge steel, double coated inside and outside with acid resisting porcelain fused into the steel at 1575° F.

VITROLINER will correct DEFECTIVE LINING, SMOKE BACK, LEAKY BRICK JOINTS, and POOR DRAFT.

Write for further details and circular.

CONDENSATION ENGINEERING CORPORATION
122 So. Michigan Ave., Chicago 3, Ill.



You metal men are installing thousands of these ventilators in new housing construction . .

Swartwout VENTILOUVER

has many advantages for you

In this "big business" of new residence building you have your hands full of sheet metal work. VENTILOUVER, for ventilating attic and under-roof spaces, is the type of equipment you like to install. Three sizes fill all your needs — No. 1, 11"x 18"; No. 2, 15"x 18"; No. 3, 15"x 21". Notice these features:

One Piece Frame Construction. Flange (or flashing) and face are stamped from one sheet. Louvers are welded into place, eliminating leakage.

No Wood Framing Necessary. Punched holes in side flanges of Nos. 2 and 3 are 16 inches spaced, permitting nailing into normal studding construction. Saves material and time.

Weatherproof and Insect Proof. Louver pitch excludes all weather. Welded construction and unique flashing arrangement prevents leakage. Framed insect screen clamped securely behind tabs, removable when necessary.

Write for Bulletin 317-A. Ask your supply house for Swartwout VENTILOUVER.

The Swartwout Co., 18511 Euclid Ave., Cleveland 12, Ohio

Swartwout

The Airmover Line

EQUIPMENT FOR EFFECTIVE ECONOMICAL VENTILATION OF INDUSTRIAL BUILDINGS

shelter rent for the units proposed for rent to new occupants.

The construction limitation order requiring prior approval of alteration and repair jobs costing more than $40 should not discourage property owners from planning to remodel or convert existing structures where additional dwelling units will be created under the Veterans' Emergency Housing Program. Wherever the cost is estimated to be more than $400, the owner or the contractor may apply for permission to construct, as well as for preference ratings to get needed critical materials, at the local FHA office.

Two general types of Government-insured home loans are available for veterans of World War II. Both types are made by private lending institutions. One such loan is guaranteed by the Veterans' Administration, up to 50 percent of the amount, with a maximum guarantee of $4,000. Thus, a loan made under the VA guarantee may be for as much as $8,000. The other is the combined hundred-percent loan guaranteed jointly by the VA and the FHA, consisting of a regular FHA loan, available to veterans and non-veterans alike, up to 80 or 90 percent of FHA valuation, and a VA "down-payment loan" for the remaining 10 to 20 percent.

♦

Plumbing Gets HH Rating

CIVILIAN Producton Administration has announced it has added sinks, lavatories, water closets to the list of building components to which HH (Veterans' preference) priority ratings apply. The action was taken by amendment of Direction 2 and Schedule A of Priorities Regulation 33.

Production this year has risen over 1945 output but it is still running behind the 1941 rate for lavatories and water closet bowls, and has not caught up with the accumulated demand for all three fixtures.

By this action, the 60 per cent set-aside of bathtubs to fill veterans' housing preference (HH) orders is expanded, effective July 1, to include each type of plumbing fixture. Fixtures which may now be obtained with HH ratings are: bathtubs, lavatories, kitchen sinks (including sink-and-tray combinations) and water closets (one-piece combinations, bowls, tanks) in residential-design models only.

The following figures show the relationship between supply and demand:

	Estimated Production First Half of 1946	Estimated Total Requirements First Half of 1946
Lavatories	790,000	1,050,000
Sinks	945,000	1,170,000
water closet bowls	1,005,000	1,110,000

Principal obstacles to production at present are scarcities of pig iron, sheet steel, crating materials, coal, coke and uncertainties in the price situation.

♦

Real Estate Inflation

HOMES that sold for $6,000 or less in 1940 have skyrocketed an average of 96.3 per cent in Pacific Coast states; the national average price rise has been 65.1 per cent. In all parts of the U. S., inflation has been greater for low-priced homes ($6,000 or less) than for medium-priced homes ($6,000-$12,000), and there have been accelerated price rises on all property

Over a third of a Century FAITHFUL PERFORMANCE

Listed by Underwriters' Laboratories, Inc. To Burn No. 3 Oil (Diesel) or lighter

UNSURPASSED

KRESKY offers future profits to DEALERS

A pioneer among oil burners Kresky finds such an unprecedented demand today that we are forced to limit shipments to old established dealers. Nevertheless new franchises are being granted now to farsighted dealers who see in Kresky's present oversold condition the promise of future opportunity. ★ The versatile Kresky line is a year round money maker due to its wide applications – heating, cooking and industrial. It includes Conversion Burners, Floor Furnaces, Forced Air Units, Range Burners and Water Heaters. *Write for Kresky Dealer Plan.*

Kresky Oil BURNERS

HEATING • COOKING • HOT WATER • INDUSTRIAL

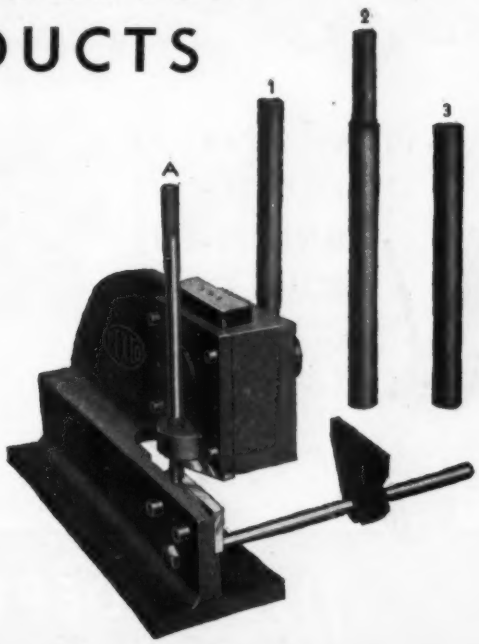
KRESKY MANUFACTURING COMPANY

Pioneers in Oil Burning Equipment Since 1910

PETALUMA, CALIFORNIA

PEXTO for BETTER SHEET METAL PRODUCTS

Endurance, Accuracy and Simplicity are the characteristics that combine to give the excellent performance of PEXTO machinery for modern Sheet Metal Fabrication.



NO. 0325 – SLITTING SHEARS

A. Adjustable hold down.
1. Permanently fixed lever.
2. To extend lever (1).
3. To further extend lever to 36".

Blades, 4½" length; Gap depth, 2"; Throat, 9".

THE PECK, STOW & WILCOX COMPANY *Since 1785* SOUTHINGTON, CONNECTICUT, U. S. A.

—homes, raw land and prepared building lots—since V-J Day.

These facts are included in a detailed, region-by-region analysis of a nation-wide survey of real estate prices made recently by the National Housing Agency and augmented by more complete data from 469 cities —90 of them 100,000 or more in population and 379 smaller cities—together with their suburbs and environs.

The 1940-1946 comparisons showed that while low-priced homes have gone up 65.1 per cent in price, medium-priced homes ($6,000-$12,000) have risen 57 per cent. Raw land has jumped 60.1 per cent, and fully prepared building lots have gone up 61.8 per cent. The figures demonstrate that inflation has occurred not only in a few overcrowded big cities, but in large and small cities alike.

Since September 1945 the increases on low-priced homes have averaged 17.7 per cent; on medium-priced homes, 14.8 per cent; on raw land, 23 per cent; and on building lots 23.3 per cent.

On "H-2" houses, authorized for construction late in the war and subject to WPB ceilings until last fall, prices have risen 30.5 per cent on a national average.

◆

Building Prices to Rise

A 14 to 25 per cent rise in building costs is inevitable whether a substitute price control bill is passed by Congress or not, Wilson Wyatt, national housing expediter, has stated.

Now that the control measure is dead—at least temporarily—Wyatt said he believed the effect on cost of building materials and construction generally would be the same whether there was no controlling legislation or a hamstrung bill that takes the teeth out of OPA.

Contractors who started homes under price control and face a prospect of finishing their houses on an unrestricted market, are caught in a squeeze if ceilings remain off building materials, Mr. Wyatt admitted.

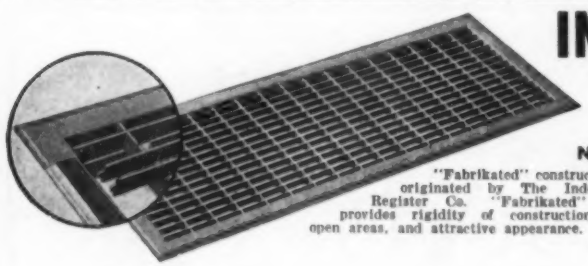
◆

Who's Spending What

THE current spending spree raises the question as to where all the purchasing power is coming from. Partly from savings—the rate of annual savings has gone down from $40 billions in 1945 to $15 billions now.

A recent survey of individual savings throughout the nation shows approximately 10 per cent of the people (those with annual incomes of over $5,000) own 60 per cent of accumulated bonds and bank deposits. A middle group of roughly 40 per cent of the people (those with annual incomes from $2,000 to $5,000) own 37 per cent of past savings. The remaining 50% of the people (those with annual incomes below $2,000) hold the remaining 3 per cent of total savings. Their savings, in other words, can't go far to boost consumer spending. And since people in the highest income group will likely hold on to their savings, it is the middle group of income recipients that provide most of the extra spending based on past savings.

Credit is another factor. The total of charge accounts, installment debts, and similar consumer credit is rising by 2½ billions a year now. Mortgage credit, on new homes for veterans, is going up even faster.



Style No. 132

"Fabrikated" construction was originated by The Independent Register Co. "Fabrikated" design provides rigidity of construction, large open areas, and attractive appearance.

INDEPENDENT "FABRIKATED"

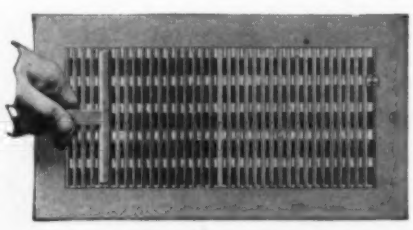
(Reg. U. S. Pat. Off.)

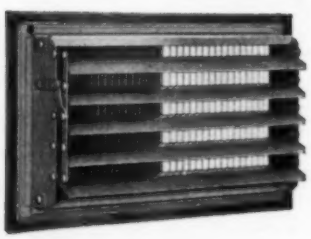
Registers · Grilles · Cold Air Faces ·

...and wrought steel registers with flexible grille bars..

★

Always Leading
Always Progressing





No. 238 Horizontal Multiple Valves

Adjustable four-way direction of air flow. The vertical grille bars are formed from sheet metal and set at an angle of 30 degrees; ½ to the right and ½ to the left. The bars may be bent to direct the air flow to any other right or left angle or straight outward. Openings between bars, ¼ inch.

THE INDEPENDENT REGISTER CO.

3747 EAST 93RD STREET, CLEVELAND, OHIO

The bigger the job— the more you need... UNISHEARS

Stanley Unishears provide a real means of speeding production and saving costs for sheet metal users. Unwieldy sheets or forms, once carted to a bench shear, are now cut to shape by a portable unishear *anywhere on the job!*

Stanley Unishears cut cleanly, without burr or distortion, along straight lines, curves and angles at a rate up to 15 feet a minute as fed. Cuts can be made entirely within the material where desired.

The portable Unishear No. 144A has a capacity of 12 gauge hot rolled steel and there are other portable types to cut 18, 16, 14 and 8 gauge. Write for full information on the complete Unishear line. Stanley Electric Tools, New Britain, Connecticut.

STANLEY

Trade Mark

HARDWARE · HAND TOOLS · ELECTRIC TOOLS

Patience is a Virtue..

George Granville

We want to again remind you of the need for patience. Conditions still prevent us from supplying you with our products the way we would like to. We are producing and shipping Wise Furnaces as fast as our supplies of materials and labor conditions will permit.

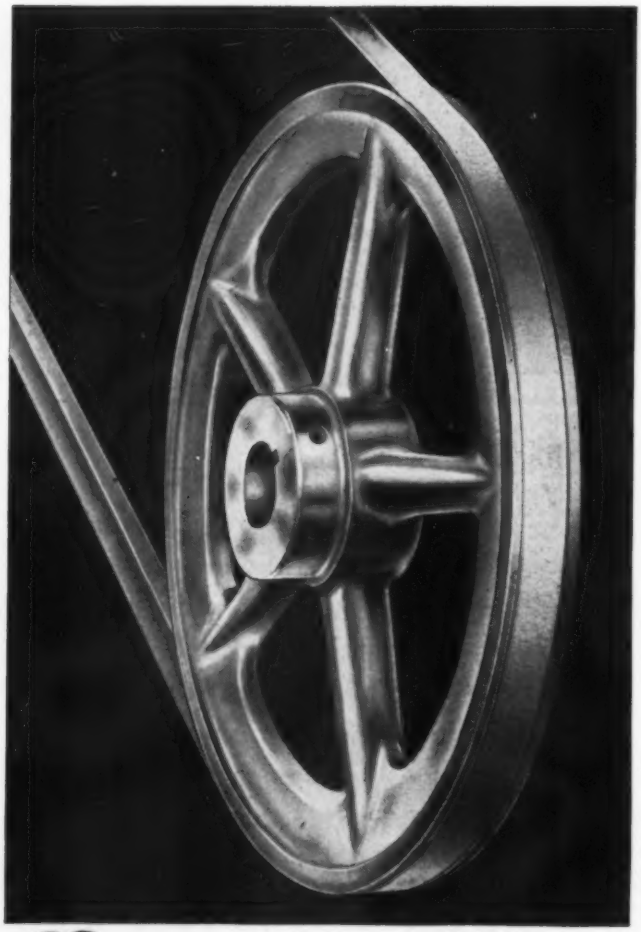
Yes — Patience is a Virtue. It is more than that to us. It is an indication and proof of your friendship and goodwill.

We thank our many loyal friends for their patience and friendship.

TRADE MARK

WISE FURNACE CO.

AKRON 8, OHIO



MAUREY V-PULLEYS

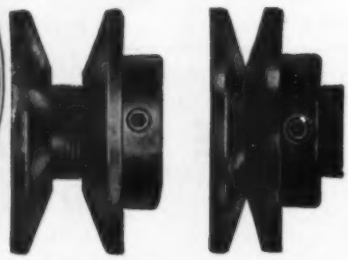
provide a L-O-N-G step toward TROUBLE FREE Performance

Our long experience in designing and manufacturing V-Pulleys, our complete understanding of their uses, and the finest materials—all are combined in making Maurey V-Pulleys the very best Pulley installations for Refrigeration and Air Conditioning systems as well as for Fans and Blowers.

For unfailing, continuous operation be sure to specify Maurey V-Pulleys.

MAUREY MANUFACTURING CORP.

2915 South Wabash Avenue
CHICAGO 16, ILLINOIS



Stainless Price Raise

ALLEGHENY Ludlum Steel Corporation, one of the major independent producers of stainless steels, has announced it was increasing immediately the price of stainless steel by 8.2 percent. This increase is equivalent to that granted to steel producers in the average realized price of all steel products as recently announced by O.P.A.

◆

Association Activities

(*Continued from Page* 94)

unprecedented in the history of the industry once construction, repair and modernization really get under way. Our trade, he said, requires the highest skill in the construction industry; construction of houses cannot proceed without full participation from the warm air heating and sheet metal industry, and the market which lies ahead looks as though every contractor will be able to sell and install practically everything which the contractor can buy. The only limit which now appears on the horizon is scarcity of labor. Mr. Primich expressed the opinion that sheet metal products would be more plentiful in the third quarter and still more plentiful in the fourth quarter, and by 1947 there may be a balance between materials and products available and ability of the industry to install.

The other speaker of the evening was J. D. Wilder, AMERICAN ARTISAN, who pointed out that the difficulties the industry is experiencing today are not a great deal different from the problems the industry solved in the 1920's and 30's, when the construction industry enjoyed its greatest boom and its greatest depression. It is certain, he said, that time and patience will solve the problems of dislocation caused by the war; time and patience will solve the existing scarcities of all commodities; and time and patience, plus individual initiative and activity, will solve even the tough problems of government regulation and control. The war, he said, accelerated science so rapidly that today many of us find our mental capacities unable to cope with daily and hourly doses of news and information over the radio and newspaper headlines. We have become a nation without time to really think. Only time and patience can solve this 20th Century problem.

◆

Punching, Curved Shearing On the Press Brake

(*Continued from Page* 81)

receiving punches, reaching about ¾ inch deep into the plate. Then we provide two lengths of cork or rubber, about 1 inch in width, and glue them to the plate, laterally from protruding punches, strips of cork or rubber are of a thickness resulting in ⅔ or 3/16 inch of the material reaching up over the cutting edges of the punches. For the upper plate we provide a strip of 85-90 carbon steel (Pompton tool steel strip), of about ¼ inch thickness and a width accommodating the rivet holes, and extending by 1½ inches over the holes at both sides of same. The strip of tool steel is appropriately bolted to the upper plate, and the press brake ram is let down slowly, for

SAVE TIME—
STEP UP PROFITS
WITH Follansbee
SEAMLESS TERNE ROLL ROOFING

Furnished in 50 Foot Rolls
—without seams

Follansbee Seamless Terne Roll Roofing eliminates cross-seaming, saves lots of time. It's easy to cut to lengths required—right on the job. No camber, edges are uniformly straight, no trimming required.

CARRIED IN STOCK
by Leading Distributors

FOLLANSBEE STEEL CORPORATION
GENERAL OFFICES • PITTSBURGH 30, PA.

Sales Offices — New York, Philadelphia, Rochester, Cleveland, Detroit, Milwaukee. *Sales Agents*—Chicago, Indianapolis, St. Louis, Kansas City, Nashville, Houston, Los Angeles, San Francisco, Seattle; Toronto and Montreal, Canada. *Plants*—Follansbee, W.Va., & Toronto, O. *Warehouses:* Pittsburgh, Pa., & Rochester, N.Y.

COLD ROLLED STRIP • ELECTRICAL SHEETS AND STRIP
POLISHED BLUE SHEETS • CLAD METALS
SEAMLESS TERNE ROLL ROOFING

For Your Benefit

BETTER PACKAGING

Nu-Way's responsibility does not end when its product has been completed for shipment.

Specially designed shipping cartons assure Nu-Way customers safe delivery of precision built products.

When you handle Nu-Way oil burners, you are assured of the best in engineering, workmanship, materials and delivery.

The Nu-Way Corporation
Quality Oil Burners Since 1921, Rock Island, Illinois

the carbon steel plate to contact the punches in the lower plate. Then a slight pressure is applied to the brake, with the punches making their "imprints" in the die-plate. Holes are drilled to the size of the punches and within the imprints. Reaming will finish the sharp cutting edges around the holes. With this done, we apply the acetylene torch flame to the cutting edges, observing directions given above.

Holes corresponding in location to the holes in the steel plate are drilled in the upper (heavy) plate, and these holes can be much larger than are holes in the die-plate, because through these larger holes will come up the "slugs" from punching the metal. The arrangement (the two heavy plates moving on shafts) can be of any practical length, and any portion of the so provided length can be used for punching multiple holes at one stroke of the press. Suitable gages are easily provided to hold the metal blank in the desired position for punching of the holes.

These "plate dies," both for punching of holes and for blanking on curved lines as also for notching as indicated in Figures 5 to 9, are here shown and described as to their making, because they are not items of regular manufacture, and therefore the user himself (the shop using them) is called upon to make them. Their production being simple, (scribing the pattern upon the plate, bandsawing the finishing on the inscribed line, hole drilling, eventual torch flame application for hardening the cutting edges, and bolting the plate-dies into the fixture), these dies can be made in any up-to-date shop on short notice, and at low cost. The procurement cost being low, the shop can have a variety of the dies at hand, to use repeatedly, as orders for the items which can be made by the dies, come along.

Bell & Bennington Specialize in Heavy Industrial Work

(*Continued from Page* 77)

from six sides to round, to connect to a stack ending in a rain cap which is shown inverted in one of the illustrations.

Industrial has also completed a job for an animal products firm which was faced with the problem of considerable loss of bone meal through air circulation. This customer found that by inefficient dust collection they were losing valuable material. The bone meal dust produced is so fine that it is difficult to separate from the air. Thus the need arose for a special collector and they approached Industrial Sheet Metal for the job.

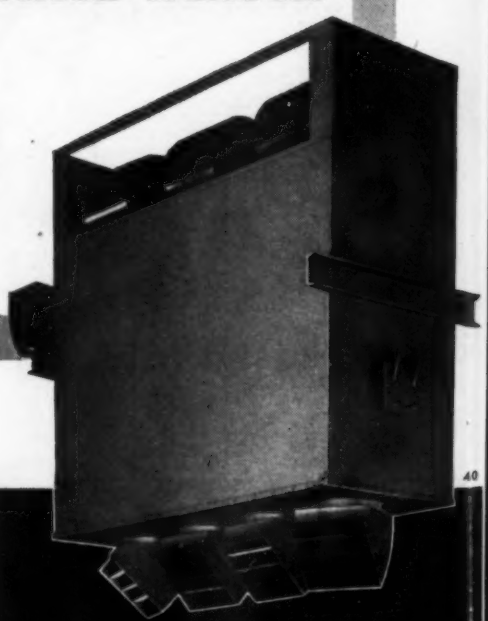
They decided to use a bag type collector with a cyclone collector. The cyclone to remove the heavier materials and the bag type the finer materials. The Industrial fabricated the cyclone collector in their own shop and purchased the bag type collector from a manufacturer of this kind of equipment.

The photographs show the bottom section of the cone of the cyclone collector and also an inside view of the upper section with its cone baffle and exhaust pipe. Then pieces were used for the top section with each piece broken in two places and the segments lapped and riveted. This particular job was fabricated from 20-gauge galvanized iron.

Save Assembly Costs with the
AIRTHERM WARM AIR DIRECT-FIRED HEATER

The Airtherm Warm Air Heater is factory assembled. No on-the-job assembly is necessary with the Airtherm Gas or Oil Fired Heater. Units are shipped from the factory, ready for installation, representing a saving in initial cost.

Nine capacities, from 650,000 to 1,950,000 B.T.U.'s.



Write for bulletin describing this economical heater in detail.

AIRTHERM
MANUFACTURING COMPANY
706 S. SPRING AVENUE • ST. LOUIS 10, MO.

Made right to STAND UP *right!*

FOR MORE than 30 years Armstrong technicians have made a continuous and careful study of every fine detail of furnace construction, installation and operation. It has been upon this kind of intensive research into the problems which you encounter that the Tharco Asbestos Furnace Cement formula has been built. It is this kind of research, plus the Armstrong exclusive methods of manufacture that has resulted in a furnace cement that is made right to stand up right!

Tharco Asbestos Furnace Cement is the first choice of leading furnace manufacturers—it is also the first choice of dealers who want their installations and repair jobs to reflect skill and thoroughness.

THARCO
Asbestos Furnace Cement
THE ARMSTRONG COMPANY

FOR EXHAUSTING FLINTY DUSTS
MORSE RAREFIED DUST COLLECTORS
DO A BETTER JOB

If you have to exhaust flinty dusts from grinding wheels, tumbling mills or sand blasts, you need a Morse Rarefied Dust Collector. These Collectors are outstanding for economy and all 'round satisfactory service.

Note these superior features:

1. No abrasive material gets through to the fan.
2. There is a constant air flow at hood inlet.
3. No moving parts.
4. No cloths or screens to to clog and require expensive maintenance or replacement.
5. Collected material is discharged automatically to storage bin.
6. No undue wear on collector parts.

Write or phone for complete information on these superior collectors. A Goergen-Mackwirth engineer will gladly survey your problem and submit recommendations.

Goergen-Mackwirth
COMPANY, INC.
817 SYCAMORE STREET, BUFFALO 12, N. Y., Phone: CLeveland 6661
SPECIALISTS IN THE MOVEMENT AND CONTROL OF AIR

Correct Practice In Oil Heating

(*Continued from Page* 69)

Draft Control. Use only a good draft regulator.

Electrical Material

½-inch T Condulet and Cover. No. T-17 condulet tees such as Crouse-Hinds and No. T-170 blank cover are suggested.

½-inch T Condulet Switch and Cover. No. 1391 Despart type switch with No. 1755 Condulet switch cover is good.

3-inch Round Box and Cover. This is a 3¼-inch octagonal box and 3¼-inch blank steel cover. (If black is not permissible, use galvanized.)

Box Connectors. Called BX connectors by electricians, use ⅜-inch straight squeeze type.

Box Connectors 90°. Usually ⅜-inch x 90° angle squeeze connectors.

½-inch Greenfield. This is a flexible metal tubing through which the wires are pulled from the condulet to the relay. It is made similar to the armored cable called BX, but there are no wires inside the armor. It is hollow and comes coiled in 100-foot coils.

Greenfield Connectors. Use ½-inch squeeze-type, straight Greenfield connectors.

½-inch Conduit Bushing. A standard item used on the end of conduit, etc., to protect the wire covering from the sharp edge of the conduit.

½-inch Locknuts. Used to fasten the conduit to the boxes, etc., this is also a standard item.

½-inch Conduit. Standard ½-inch black conduit, if this may not be permissible due to dampness, salt air, laws, etc., use galvanized or Sherardized conduit.

½-inch Pipe Clamp. This is a one ear, galvanized, malleable strap to support the conduit.

Ground Clamps. Can use ¾-inch to 1-inch ground clamp like the Sherman Solderless Copper Ground Clamp.

Wireless Connectors. Use No. 74 Ideal Connectors or similar. The connectors must be capable of connecting three No. 14 wires.

Red, Black and White Wire. Usually bought in 500-foot coils and called No. 14 rubber cover wire. There is a new product on the market called No. 14-T covered wire; this is smaller in diameter and some mechanics like it better than rubber covered wire.

Thermostat Wire. If your oil burner relay uses a two-wire thermostat buy No. 18 two-wire thermostat cloth covered wire. If your oil burner relay uses a three-wire thermostat ask for No. 18-three cloth covered thermostat wire.

Thermostat Staples. Insulated staples in the No. 5 size.

10-Amp. Fuses. Either a plain type clear-site fuse, if your oil burner has built-in overload protection, or if the motor does not have built-in overload protection, then use a "Fusetron." The local electrical supply house will select this if you give them the ampere rating on the oil burner motor name plate. Don't forget to include the transformer in the load when selecting the "Fusetron."

3 x 4 x 5 Cutout Boxes. Usually an 18-gauge box which measures 3 x 4½ x 5 inches with the cover hinged at one end. Also called a "Type-A" cabinet or "Junction" box. The cutout which is used in the

UNIDUCT

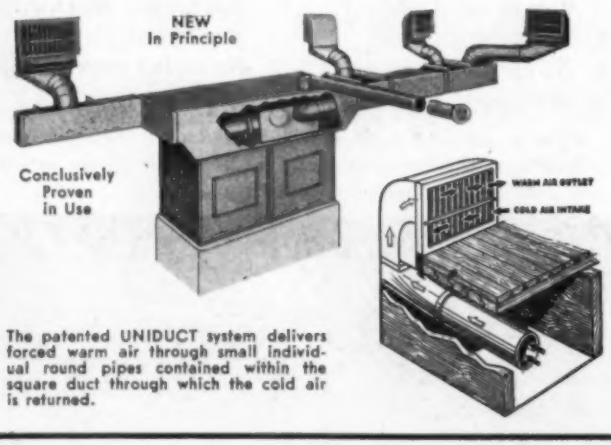
T. M. Registered

Revolutionizes DUCT INSTALLATION —A *New* and *Positive* Factor in HEATING EFFICIENCY

LOW INSTALLATION COST—SIMPLE "ONE-TRIP" BALANCING

Conserve your manpower! UNIDUCT easier, simpler installation requires less manhours—enabling you to make more installations, more profits with your present manpower.

One Trunk for both warm and cold air!
One Register for both warm and cold air!
One Stackhead for supply and return!
One Plenum for warm and cold takeoffs!



The patented UNIDUCT system delivers forced warm air through small individual round pipes contained within the square duct through which the cold air is returned.

Easily installed in old or new houses.
More Even Temperature—more floor space.
Minimizes combustion and mechanical noises.

HERE IS A TYPICAL LETTER FROM A USER

We have installed over one hundred UNIDUCT Systems and can honestly say every single one is operating perfectly.

"Fifty-two years' experience in installing furnaces has made us very familiar with the problems of forced air heating. The two greatest benefits we have found in the UNIDUCT System is that drafts and difficulty in balancing are completely eliminated. All rooms heat evenly. There are no cold corners or drafty spots."

(Signed) E. Kleugel & Company, St. Paul, Minn.

WRITE TODAY FOR COMPLETE INFORMATION.

GENERAL HEATING PRODUCTS CO.
3553 University Ave. S. E. Minneapolis 14, Minn.

More SALES FOR *You*

G-A THERMOSTATS
With New Type
DAMPER MOTOR

Watch for full details on the new improved Gleason-Avery Damper Motor. It's designed for our popular No. 130 Furnace Sentry Unit—means more efficient temperature control, easier operation, increased sales!

No. 130 FURNACE SENTRY UNIT PACKAGE

For hand-fired domestic heating systems. Complete with smartly finished G-A thermostat, damper motor and all accessories—ready to install quickly and easily.

Direct orders accepted when accompanied by wholesaler's name.

Approved by Anthracite Industries Laboratory

Gleason-Avery, INC.
AUBURN, N. Y.
A RELIABLE NAME IN TEMPERATURE CONTROLS

LINE UP NOW WITH
ECON-O-COL STOKERS

. . . to cash-in on the huge backlog of stoker sales! You increase your profits through faster sales, make fewer service calls by selling ECON-O-COL's complete line of precision-built, highest quality stokers. And a hard-hitting promotional program backs you up every step of the way! Details of our exclusive dealer franchise, now available in several areas, await your inquiry. Write or wire us today.

ECON-O-COL COAL BURNER
THE SHIELD OF QUALITY

ECON-O-COL
The "Stronghearted" Stoker
BUILT BY COTTA TRANSMISSION COMPANY • ROCKFORD, ILLINOIS

Worried about

FURNACE REPAIR PARTS?

Try

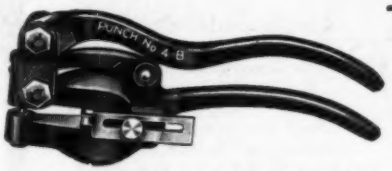
Northwestern

Worrying is a thing of the past with furnace men who let Northwestern fill their orders. We've been in the business a long time and it's frequently necessary for us to "bust a gallus" to supply a badly needed order . . . but the important thing is we *fill* the order! Last year we came through with flying colors, and this year finds us in an even better position to supply you with the many items needed in furnace repair work.

Get in the Northwestern habit, it saves you time, money and worry. Get out after the business and let *us* worry about filling the orders. Write today for literature, and remember . . . always try Northwesten FIRST!

NORTHWESTERN STOVE REPAIR COMPANY
662 West Roosevelt Road Chicago, Ill.

WHITNEY
LEVER PUNCHES



NUMBER FOUR "B" PUNCH

This punch for sheet metal work has a capacity of ¼" through 16 gauge. Weight 3 lb. Length 8½". Depth of throat 2". Complete tool includes three punches and three dies of specified sizes with die adjusting key. A time-saver for your up-to-date shop.

And here's another handy tool for the modern shop — the No. 2 Punch. Length 23". Capacity 5/16" through ¼" iron, weight 14 lbs., depth of throat 1-11/16". Punches and dies 3/32" to ½" by 1/64".

NUMBER TWO PUNCH

W. A. WHITNEY MFG. CO.
636 RACE ST. ROCKFORD, ILL.

BOTH Star Performers

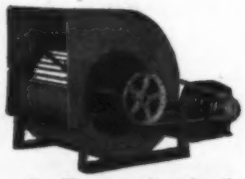
REX BLOWERS

A great hurler excels on the diamond because he has such a wide variety of pitches—a repertoire that enables him to really bear down on any type of batter.

Rex Blowers excel in the field of heating and ventilating because they are available in such a broad range of sizes—a range that permits selection of a unit that most efficiently meets any air-moving requirement.

Not five, not ten—but TWENTY-TWO delivery rates, from 400 C.F.M. to 32,000 C.F.M. are offered by this really complete line! All units are designed by field trained engineers and sturdily constructed to insure user-satisfaction with their quiet operation and trouble-free service.

For heating and ventilating installations that consistently win and maintain harmonious customer-relations, profit-minded dealers choose Rex Blowers.

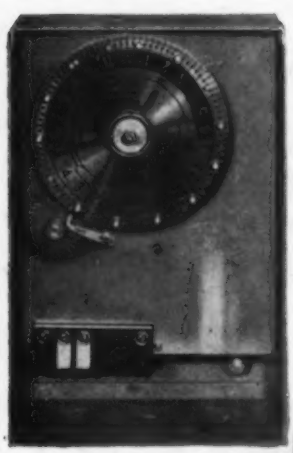


It will pay you to review the advantages of using Rex Blowers on future jobs. Send for Bulletin No. 222 for complete information.

Air Controls Inc
Div. of
The Cleveland Heater Co.

2310 Superior Avenue **Cleveland 14, Ohio**

Precision Control of TIME OPERATIONS



For around-the-clock control of automatic heating installations, use one of the Paragon 100 Series Automatic Timers. These Time Switches are ideal for controlling the operation of stokers, oil burners, or gas fired equipment during the heating season, and for the operation of air conditioning systems in the summer. The control pins allow settings at intervals as frequent as 15 minutes on the large, 6-inch diameter dial. Rugged construction, vibration proof, self lubricating, equipped with a Telechron motor. Furnished complete with cover case, and punched for wall mounting.

PARAGON ELECTRIC COMPANY
1608 Twelfth Street
Two Rivers, Wisconsin

Order now and get ready for the heating season demand. Available for Immediate Shipment

Paragon Two Rivers Wisconsin

3 x 4 x 5 cutout box is called "two wire main line single fuse plug cutout." Some electricians call it a solid neutral fuse block. Your local underwriter inspector should be consulted if you are in a locality where the neutral wire is fused.

BX Staples. The 1⅜-inch Armored cable staples are O.K.

End Bushing. This is a ½-inch fiber or porcelain male insulating end bushing with a lock nut.

The kit may include: two No. 12 x 1-inch screws for the fuse block; eight No. 14 x 1-inch wood screws for cutout box, 3-inch box and pipe clamp; two 14 x 1½-inch wood screws for 1¼-inch pipe strip around vent pipe when using the combination fill and vent box, ten Parker Kalon No. 7 x ½-inch for fastening the smoke pipe joints.

◆

Quick Picture Of Home Building Program

(*Continued from Page* 54)

of rental units, at least half must be subject to maximum shelter rents which are at or below a "dividing line."

The "dividing line" in any particular city or area shall be the highest approved maximum shelter rent in the lowest third of applications approved in the local FHA office from January 15 to March 29, 1946, for rental dwelling units to be built under CPA Priorities Regulation 33. A further provision states that no "dividing line" shall be established exceeding $60

Randall

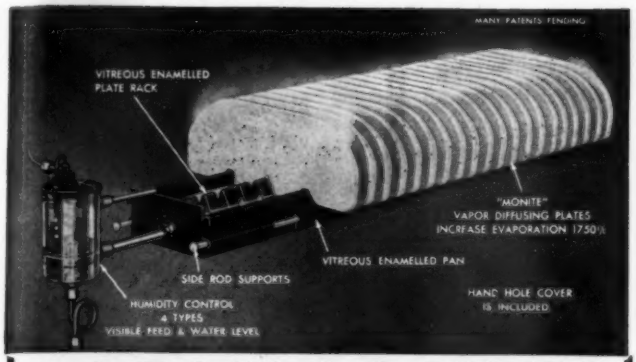
SELF-ALIGNING SELF-LUBRICATING PILLOW BLOCKS

The reputation of your heating and air conditioning equipment is at stake when you choose pillow blocks. Hold bearing noise down to zero, not just for years, but for the life of the equipment . . . specify QUIET Randall Pillow Blocks.

Randall's thirty year reputation for building better graphite bearings is your assurance of top quality and trouble-free performance.

For every air-handling need Randall offers a Pillow Block that's engineered for easy installation and economy of maintenance. Send for Catalog No. 42; or write our engineering department for assistance with your bearing problems.

RANDALL GRAPHITE PRODUCTS CORPORATION
Dept. 711 **609 W. Lake St.** **Chicago 6, Ill.**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VITREOUS ENAMELLED PLATE RACK
"MONITE" VAPOR DIFFUSING PLATES INCREASE EVAPORATION 1750%
VITREOUS ENAMELLED PAN
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HUMIDITY CONTROL 4 TYPES VISIBLE FEED & WATER LEVEL
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MONMOUTH HUMIDIFIERS

DEALERS in all localities are enthusiatsic about Monmouth Flotrol Humidifiers, because they mean easy, EXTRA sales, while you are selling, installing or servicing a warm air job.

One of the most important requirements of healthful heating is proper humidity. Every warm air system, new or old, needs a good humidifier. Efficient performance is assured by thousands of Monmouth installations. Correctly installed, a Monmouth Humidifier is a perfected, inexpensive device, which will give many years of trouble-free service. Use Monmouth on your jobs.

Full details and prices sent on request.

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★ ★ ★

Performance is the yardstick for measuring the efficiency of any heating plant, and those that will operate year after year with little or no attention are the ones which will return you the most profit.

You're sure of top drawer performance when you install ATH-A-NOR Furnaces and parts exclusively. Over fifty years of furnace manufacturing experience guarantee you home heating plants with performance ratings and lasting qualities to satisfy the most critical clients. Investigate now . . . write for literature.

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Manufacturers of Quality Heating Equipment for Over Fifty Years.

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Brundage BLOWER-FILTER PACKAGE UNITS

. . . Are outstanding in the field for — Sturdy construction . . . Simplicity of Installation . . . Quiet Operation . . . Dependable Performance

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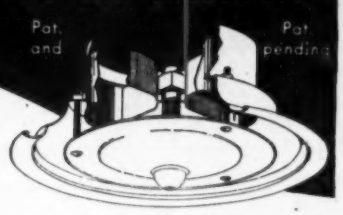
Blower Specialists Since 1919

KALAMAZOO 11, MICHIGAN

Cut installation time in half with adjustable air diffusers



Kno-Draft *Adjustable* Air Diffusers

. . . are equipped with easily regulated unit dampers for fast system balancing and an air direction adjustment for ceiling heights and individual or seasonal requirements.

Any desired condition at your fingertips

Type K Adjustable Diffuser with Type D Volume Damper

(damper regulator protected by tamper-proof cap)

Specify Kno-Draft Diffusers for better mixing of room and supply air, more uniform temperatures throughout the occupied zone and noiseless, *draftless* air distribution.

FREE HANDBOOK: Contains clear sketches, charts, dimension prints and instructive text that simplify the selection and installation of air diffusers. Please write Dept. **J-17** for your copy, using your company letterhead.

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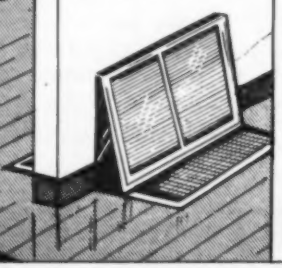
Something Really NEW!

USE A BARNES GAS FLOOR OR DUAL FURNACE TO SIMPLIFY YOUR HEATING PROBLEMS FOR ALL VETERANS HOMES.



For **Veterans Homes**

California Builders of G.I. Homes prefer and use Barnes Better-Bilt Gas Furnaces.

Because:

The Barnes Furnace requires no pit. Installation is simple. Constructed of heavier steel. Built with water tight pan on all duals. Has an attractive grille and a safety locking devise on pilot and burner.

GAS BARNES Better Bilt

H. C. Barnes, Inc.

Sales Office: 330 E. Fourth St.
Long Beach 2, California

per month shelter rent unless submitted to the Washington Office of the FHA for probable reduction before approval.

(b) Of the authorized dwelling units to be sold, at least 50 per cent must be subject to a maximum sales price at or below an established "dividing line." The "dividing line" for the sale of dwelling units will be an amount equal to the highest maximum sales price in the lowest third of applications approved in the same base period for sale dwelling units to be built under Priorities Regulation 33. A further provision states that no "dividing line" in excess of $7,500 shall be established unless submitted to the Washington office of the FHA for probable reduction before approval.

Here is an illustration:

Take a locality where 4,000 units were set as the goal for the second quarter. Under this channeling order, 25 per cent or 1,000 units must be rental units. If one-third of the rental units built in the first quarter were below $50, then 500 of the 1,000 units authorized in the second quarter must rent below that figure. A "dividing line" for sale units would be established in the same way. If it is $6,500 for this particular locality, then of the 3,000 sale units authorized in the second quarter, 1,500 will have to be below the "dividing line" for that locality.

An accompanying regulation (NHA 80-1) provides that the maximum cost or sales price permitted veterans or servicemen building homes for their own use and on which priorities are sought under CPA Regulation 33, shall not exceed $10,000, whether rural or urban, and that repairs or alterations cannot exceed that amount. This supplements the ceiling regulations of $10,000 sales price and $80 rent already set for

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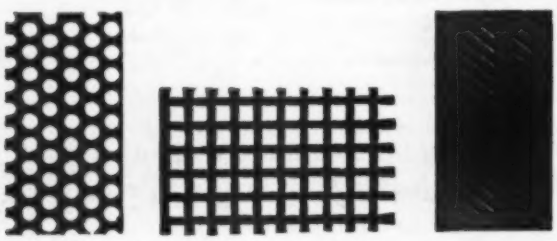
in many important and essential industries such as the processing of grain, food products, chemicals, metals, coal, petroleum, etc. We make all sizes and shapes of holes to meet the most exacting conditions.



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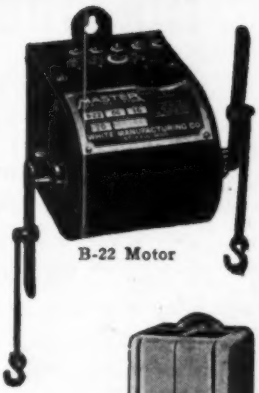
MASTER TEMPERATURE CONTROLS

For over a quarter of a century, "White" has been a distinguished name in the heating industry. Master Temperature Controls are famous for their greater comfort, more efficient service and longer life . . . factors which insure complete satisfaction for your customers and growing sales for you.



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D-22A
Regulator Switch

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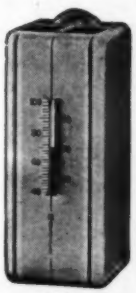

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Plain Thermostat

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Nos. 129 and 130
POWER PUNCH PRESSES
DEEP THROATS—12" and 18"
CAPACITY—10 Tons
STROKE—1¼" SPEED—175 R.P.M.

We can furnish punch holders, die shoes, and various punches and dies.

Write for Catalog.

Nos. 28, 29, 58, 68
DEEP THROAT TOGGLE FOOT PRESSES
THROAT DEPTHS—7", 10", 18", 24"
CAPACITY—2" thru 16 ga.

We can furnish any type or size of punches and dies (rounds, squares, etc.) for these foot presses.

WHITNEY METAL TOOL COMPANY
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YOUR BLOWER Requirements

AVAILABLE AT

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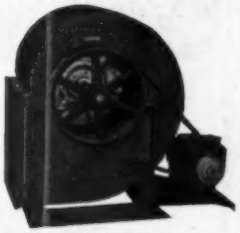

★ **BLOWERS FOR EVERY PURPOSE**

Double Inlet and Single Inlet

HY-DUTY Blowers, 9¾" to 25" • Top and Bottom Horizontal, and Top and Bottom Vertical Discharge • Top and Bottom Motor Mounting • Dual Units also available.

★ **CENTER DISC WHEEL**—Double Inlet, Double Width • Reinforced Center Disc • Designed for Modern Air Conditioning and Heating Applications • Sizes, 4½" to 50".

★ **ENGINEERING DATA**—Write for Catalogues showing complete Performance Data • Experienced Engineering Department available to help solve your Air Handling Problems.

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Let's All "Hold the Line" on Prices

PEERLESS has no intention of taking advantage of opportunities for raising prices . . . will confine its increases to those granted by OPA or those which may be made necessary by higher material costs.

PEERLESS believes this is the only way the return of government regulation can be prevented and the nation restored to a sound economy. That's why we're "holding the line" and are hoping that you'll do likewise.

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Thermo-Drip Humidifiers moisten air as it is heated, in direct proportion to temperature. Thermo-Drip Humidifiers regulate water feed and control the amount of evaporation. Thermo-Drip Humidifiers are manufactured from the finest materials and are designed and engineered to simplify your installation and insure complete satisfaction to your customers. Get all the facts on Thermo-Drip Humidifiers now. Install them on any type or make of furnace for correctly balanced humidification and healthful comfort. Write us today.

Automatic **HUMIDIFIER CO.**
CEDAR FALLS . . . . . IOWA

THERE'S A THERMO-DRIP HUMIDIFIER
FOR EVERY TYPE OR MAKE OF WARM AIR FURNACE

others building homes for veterans.

On the "dividing line" determination to be used in the channeling order, FHA concedes differentials in construction costs and admits the following approximate figures based on reports for the first quarter as the sales price "dividing line" in various cities:

New Orleans, $4,500; Atlanta, Louisville, Fort Worth, $5,500; Denver and Seattle, $6,000; Indianapolis and Kansas City, $6,500; Los Angeles and Milwaukee, $7,000; Philadelphia, Providence and Boston, $7,500; Pittsburgh, $8,000; Washington and Chicago, $8,500; New York, $9,000. Mr. Wyatt stressed again the fact that any "dividing line" over $7,500 probably will be reduced.

◆

Kruckman— Washington Letter

(*Continued from Page* 53)

in the larger cities, and elsewhere, in which, undoubtedly radiation will be the chief manner of heating.

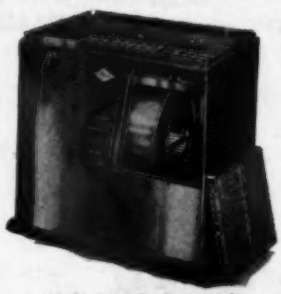
Limitations of W-E-T Bill

Those who have studied the bill without emotion, or political bias, say that S. 1592, over-all, does not go far enough toward providing an adequate supply of decent housing at reasonable prices, either now, or over the next few years. It naturally establishes a system of priorities for veterans in disposal of war housing, which, however, does not increase the supply of existing dwellings. The chief argument in its favor on one side is that it will provide low-cost housing for

Properaire **BLOWERS—**

EXHAUSTERS and FANS

Easily adapted, high quality air moving equipment at attractive, reasonable cost.



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"B" ASSEMBLY Belt Drive

TYPE E Direct Drive

Built for the HOME and OFFICE, and for STORES, FACTORIES and INSTITUTIONS.

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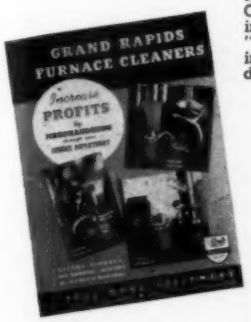

GRAND RAPIDS FURNACE CLEANER
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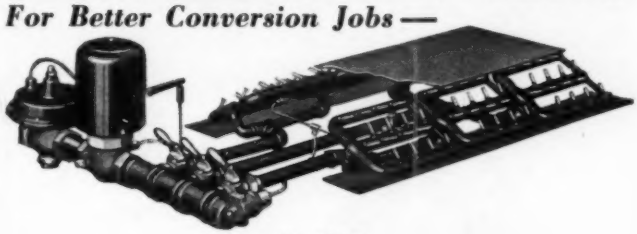
DOYLE VACUUM CLEANER COMPANY, 227 Stevens St., S. W., Grand Rapids 7, Mich.

BARBER BURNERS

For Better Conversion Jobs —



No. 104-B

Barber gas conversion burners, automatically or manually controlled, are tailor-made in proper sizes and capacities to fit the heating requirements of all types and sizes of round or oblong furnaces and boilers. They operate with maximum economy and efficiency, both from the heating equipment and the gas fuel, no matter what type. Barber design is widely preferred for its superiority over many competitive, *experimental* burners, because of its basically better combustion principle. If the owner already has automatic controls, these usually can be used with a Barber installation. The burner is the *heart* of the appliance. See that *your conversion* jobs are equipped with genuine Barber burners.

Listed in A.G.A. Directory of Approved Appliances. Ask for catalog and prices on conversion burners, appliance burners, and pressure regulators.

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for Furnaces, Boilers and Appliances

MACHINES THAT NEED NO POWER

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Famco Foot Presses for light forming and stamping are available in 10 models (for bench or floor mounting). Low in cost.

Famco Arbor Presses, in 32 models, bench and floor mounting, will deliver up to 15 tons pressure . . . require no electric power.

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SQUARING SHEARS • ARBOR PRESSES • FOOT PRESSES

Write Today
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➔ Investigate the advantages of HESS Equipment — backed by 73 years of Heating and Ventilating Experience

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TWO HEADS
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ACE 2-1 HAMMERS offer a combination of steel and rubber heads that give a dual use. Rubber head with correct degree of toughness is replaceable when worn. Hickory handle and drop forged heat treated shank assure sturdiness. Perfect balance. Weight 2½ lbs. There is also the ACE 2-1 combination rubber and fiber headed hammer with aluminum shank for light metal and electrical work. Both heads replaceable. Weighs only 1¼ lbs. Write for literature. Thousands in use.

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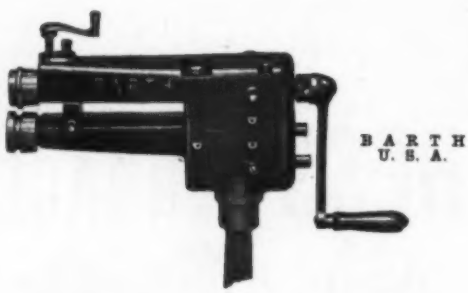

DEEP THROAT COMBINATION MACHINE
(Patented)

A sturdily built, all-purpose machine for beading, crimping, burring, turning, wiring and flanging. 22 gauge capacity, 8½ inch throat.

Ask Your Dealer

THE BARTH MANUFACTURING COMPANY

MILLDALE, CONN.

low-income groups. Also, for immediate effect, it expands credit to purchase the small supply of available homes, but does not expand the supply.

The long-range effect of the proposed law would be to expand the supply of credit by providing easier terms for FHA-insured mortgages, and by offering various inducements to encourage the flow of capital to housing projects. It is pointed out, however, there is no shortage of credit for housing; that there is an ample supply of lendable funds for home-building. A veteran may now buy a house costing up to $12,000, at 4%, with no down payment. They tell us here there is more credit available than the market can absorb. In materials we have less supply than demand; in money we have more supply than demand. And there is not much change ahead so far as we can foresee.

The bill does not offer much in the way of remedies for the high cost of housing. It attempts to reduce the cost of the current financing by artificially lowering interest rates, lengthening the terms of some FHA mortgages, etc. The FHA people oppose it because they fear it may impair their insurance system. It is pointed out that under this proposed law a $5,000 house will still cost $5,000, but monthly payments will be less and will stretch over a longer period. Friendly students of the bill suggest what is needed is a greater supply of materials, more skilled labor, more efficient construction methods, elimination of restrictions in trade and labor practices and in local building codes.

Too Much Federal Control

The same friendly critics point out that Wyatt's objectives obviously parallel the purposes of the bill, but on a temporary basis; and they emphasize that

Steering
A STRAIGHT COURSE
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If you want to get into the stoker business in the BEST WAY, sell a stoker with a proven record of performance over a long period of years . . . a stoker praised by thousands of satisfied users, built by an experienced Stoker manufacturer, a 79-year-old company that knows how to help its dealers win profits.

AGAIN "Stoker Sales are Blowing a Gehl."

GEHL STOKERS

are well-known in the domestic, commercial, and industrial field for economical, trouble-free performance. The friendly "family" relationship between Gehl and its dealers encourages steady growth and continually growing sales and profits.

Domestic and industrial models now available.

FIND OUT about the extra values offered in Gehl Stokers, and the fine program of dealer cooperation. WRITE today for literature and details.

GEHL BROS. MFG. CO.
Established 1867

Dept. BG-801, West Bend, Wisconsin

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PENN-AIRE FURNACES

GRAVITY, CAST IRON

Popular Price
Practical Design
Economical Operation

HEAT
CLEAN AIR

Dealers: Join the National Association's Campaign to promote true indoor comfort through conditioned warm air.

UNION MANUFACTURING CO., INC.
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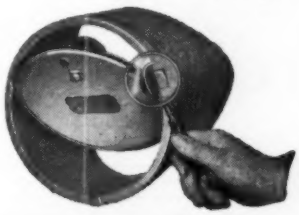

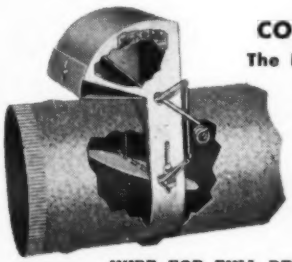

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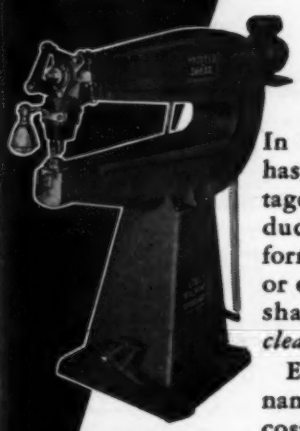

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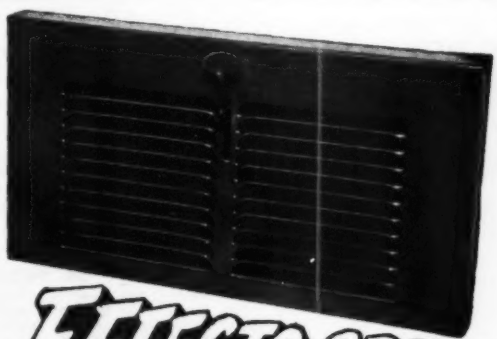

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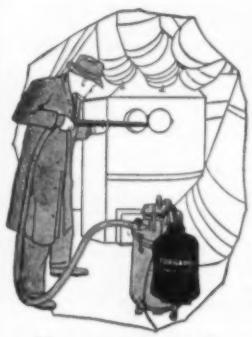
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the Wyatt program as a cure for high costs, permanently applied, will lead to complete domination of the housing industry by the Federal Government. Apparently there is considerable fear that the Wyatt program, as well as the Wagner-Ellender-Taft bill, in varying degrees of speed, spell the nationalization or socialization or communization—it does not matter what label you give it—of the housing industry. They think local building codes are not the business of the Federal Government, except by means of such persuasion as the Department of Commerce has been trying to exert. Collusion can always be reached by the Department of Justice, and other agencies.

The bill pays much lip service to private enterprise, but it clearly means expanded Federal influence in the housing field. It is very clear it will have its primary and major and most immediate effect in expansion of the Federal program for low-rent multiple housing projects, and similar large-scale undertakings. Large builders have been very keenly interested, and generally favorable. Business people as a rule have opposed the bill in all hearings. They sometimes favored some particular aspect, but opposed the measure as a whole, and invariably suggested they would prefer postponement of projects in which they are interested rather than pay the price of the enactment of this bill. Much of the preamble of the bill is concerned with making clear a policy that will place the construction industry as a contributor "towards an economy of full production and full employment."

Summary of W-E-T Bill

All opinion this reporter has been able to gather here, aside from the Wyatt following, is soberly con-

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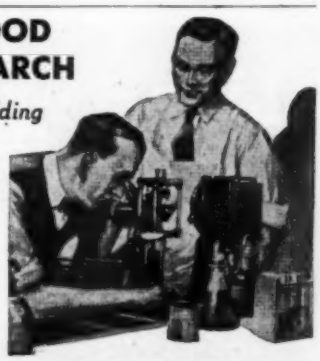

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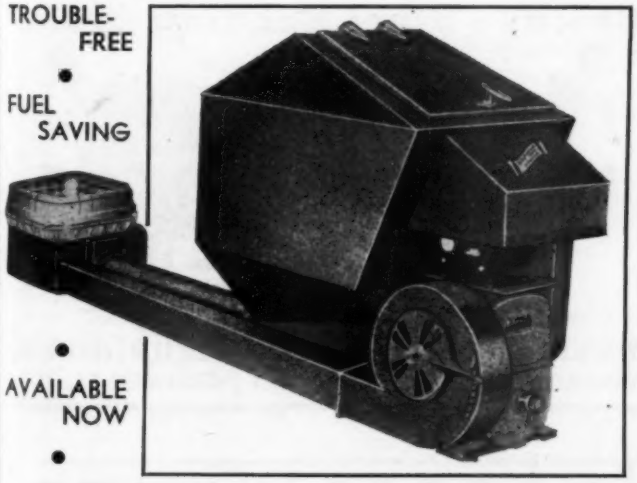

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vinced the bill will establish a Federally dominated housing program and industry. The Wyatt-Blandford group comment is invariably more social than economic. The 12,600,000 nonfarm housing units contemplated within 10 years are considered more in the light of jobs and improved living conditions than as purely industrial products. The bill has a provision for yield-insurance, a system under which Government would insure against loss, lending institutions which invest in new rental housing at lower rents "than are possible through conventional methods of financing." The rehabilitation phase is constantly stressed by the Wyatt-Blandford group, particularly the fact that it would involve private financing for social objectives.

Briefly, this is an outline of the bill: Title 1, continues on a permanent basis the National Housing Agency, which was established as a temporary wartime consolidation of all housing activities of the Federal government, including the Federal Housing Administration, the Federal Home Loan Bank Administration, and the Federal Public Housing Authority. Title II, provides for a program of research in connection with housing construction, finance, markets, local planning, etc., to be undertaken by the NHA. Title III, expands lending powers of Federal savings and loan associations, and enlarges the scope of the FHA Title I and Title II insurance program. Title IV, establishes a new FHA home financing program for low-income groups. Also provides FHA insurance for financing low-rent and cooperative dwelling projects. Title V establishes a program of yield-insurance designed to insure amortization and an annual return of 2.75% on privately financed low-rent housing proj-

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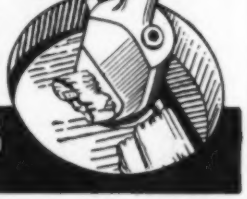

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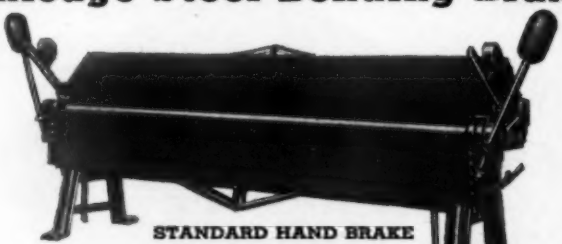

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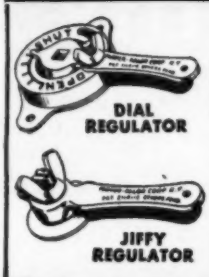

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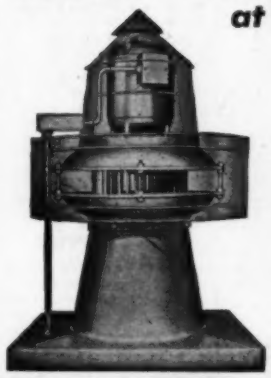

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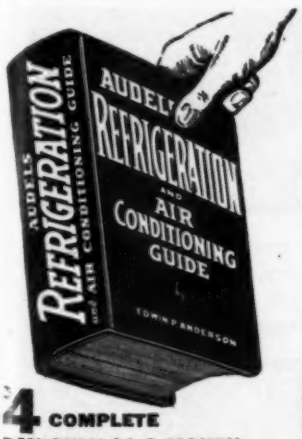

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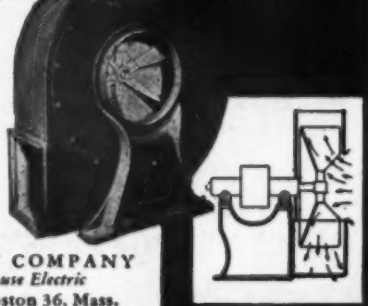

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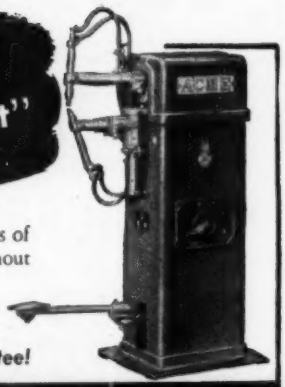

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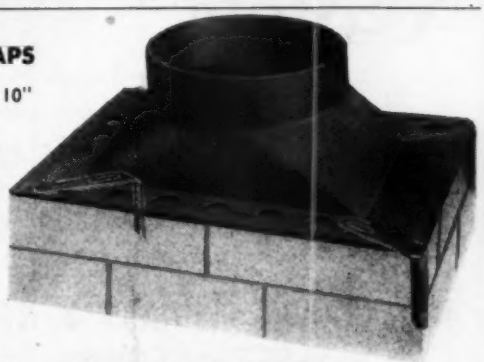

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THE ADAMS COMPANY

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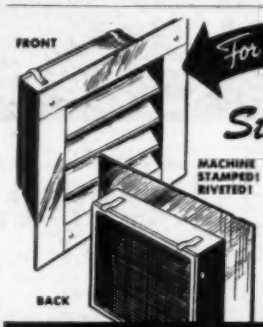

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Stationary **LOUVRE VENTILATORS**

MACHINE STAMPED! RIVETED!

- PRIME COATED GALVANIZED IRON, COPPER, ALUMINUM OR STAINLESS STEEL
- EVERY ONE IDENTICAL • NO VARIATIONS

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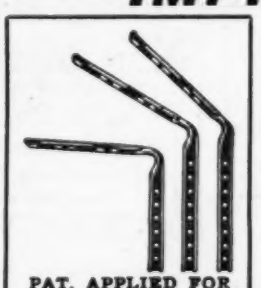
553 RIVER ROAD · N. TONAWANDA, N. Y.

IMPROVED!



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• B B •

No. 12 SHANK

33⅓% STRONGER

IMPROVEMENT IS APPLIED TO No. 15—SQUARE, No. 13—¼ PITCH, AND No. 25—½ PITCH.

SOLD THRU LEADING JOBBERS EVERYWHERE

BERGER BROTHERS CO.

Main Office & Factory

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GOOD DELIVERY

Exhaust Fans (all sizes) with automatic louvres.

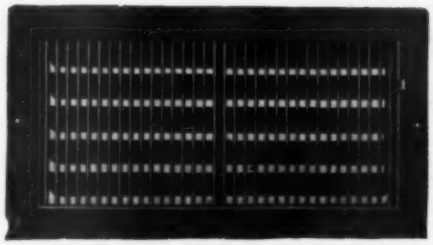
Blowers, Cooling Units (without motors).

Write for descriptive circular.

Illinois Sheet Metal, Ltd.

23 West Hubbard Street — Chicago 10, Ill.

AIR-VANE REGISTERS



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MT. VERNON, ILLINOIS

The *Tempscribe* RECORDER | INDISPENSABLE AID IN Balancing HEATING SYSTEMS

- SHOWS NEED FOR REPAIRS OR MODERNIZATION OF HEATING INSTALLATIONS!
- DEMONSTRATES THE HEATING COMFORTS THAT WILL RESULT FROM RECOMMENDED IMPROVEMENTS!
- SETTLES COMPLAINTS DIPLOMATICALLY AND KEEPS CUSTOMERS SATISFIED!

The TEMPSCRIBE Temperature Recorder makes round-the-clock records that show highest and lowest temperature for 24 hours, temperature extremes, and frequency of temperature fluctuations. Compact, self-contained; no electrical connection; requires no watching.

The TEMPSCRIBE can save your time and money on service calls— *and build your reputation for reliable, expert service.*

Write for Bulletin 704

Bacharach INDUSTRIAL INSTRUMENT CO.
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Also Available!
MOTOR OPERATION RECORDER
. . . records on-and-off periods showing cycling frequency, length of running time, and percentage of heating capacity utilized.

National Distributors { Cole-Sewell Engineering Co., St. Paul, Minn.
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from your Wholesaler
Since 1909

*Reg. U. S. Pat. Office
Pat. Nos. 2,115,591 - 2,106,577

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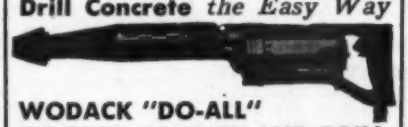
Write for Details
DOYLE VACUUM CLEANER CO.
227 Stevens St., S.W.
Grand Rapids 7, Mich.

Drill Concrete *the Easy Way*



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Telephone AUstin 9866

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Certain Territories open
To Sell
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FOR SALE: Stainless Steel Sheets 18-8, 2B Finish

.125	35c lb. up to 3 tons.
.104	32½c lb. 3 to 5 tons.
.097	30c lb. over 5 tons.
.063	40c per lb.

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SITUATION OPEN

Man with sheet metal experience to do designing, drafting and estimating for middle west sheet metal job shop doing industrial work only. Excellent opportunity, permanent position. Address Key No. 641, American Artisan, 6 No. Michigan Ave., Chicago 2, Illinois.

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Established manufacturer of heating and fuel burning accessories requires executive with electrical or mechanical engineering background. Exceptional opportunity with salary plus commission. Forward complete information concerning education, work background, etc., first letter. Address Key No. 642, American Artisan, 6 No. Michigan Ave., Chicago 2, Ill.

A LIFE-TIME OPPORTUNITY

First class Furnace & Sheet metal man, war veteran preferred, to take complete charge of best equipped and leading shop in Eastern Nebraska town of 5,000 population. Would consider sale of part interest. No money necessary. Also operate plumbing department. Both under same ownership and management for 44 years. Address Key No. 643, American Artisan, 6 No. Michigan Ave., Chicago 2, Ill.

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WANTED—Shearings any amount—all sizes. Galvanized, cold and hot rolled aluminum. Stainless and copper 6" minimum width to 36" minimum length, uniform quantities. Gauges from 16 to 30 inclusive.
Write or wire
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Los Angeles 21, Calif.
Trinity 4713

★ ★ ★ SERVICE SECTION ★ ★ ★

POTTS SERVICE

consists of the warehousing and selling of the following and many other products:

METAL WORKING MACHINERY AND TOOLS

COPPER — Sheets, Rolls, Nails, Tubing, Pipe, Trough, Accessories.

ERAYDO — Copper Hardened Zinc Sheets, Rolls, Pipe, Trough, Roof Edgings, etc.

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SOLDER—Potts Quality.

CHROMALOID & NICKELOID—Zinc Sheets.

OTISCOLOY — Manganese and Copper Content Sheets, Angles, Flats, Rounds.

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THE COMPLETE DRIVE CLEATING MACHINE

SAVES MORE TIME per joint of pipe, over ordinary hand methods, than any other machine used on square pipe work . . . and it is USABLE MORE OFTEN per job, because it edges the pipe and makes drive cleats to join them together.

NOW TWO SIZES

NO. 12
Takes All Sizes Up to 12"

NO. 18
Takes All Sizes Up to 18"

Write for More Information.

R. E. SMITH — **1513 MONROE, WAUKEGAN, ILL.**

THE HINMAN BENDERS

Angle & U, Eye and Pipe

Write for catalog.

manufactured by

J. K. Supply Company, Successors to L. R. Evans Machine Co.
SANDWICH, ILLINOIS

SPECIAL! SPECIAL! SPECIAL!

One Horse Power Furnace Vacuum Cleaners, complete with eleven attachments $89.50

Hasko Stainless Steel Nozzles with Strainers, best grade, accurate. 93c

Hasko Fuel Oil Gauges, reading in gallons, for 275 gallon inside tanks $1.60

Send for our list of oil burner and stoker specialties.

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in Liquid, Paste and Salts

STAINLESS STEEL FLUX

SALBRICK

Solid Sal-Ammoniac

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In Stock — Immediate Delivery

Complete Line New and Used Sheet Metal Machinery

MILTON SLIP ROLL FORMING MACHINES

These machines are new and of our own manufacture. 10 ga. and lighter. 3' to 10' long. Compact, heavy duty, conservatively rated. Power or hand operation. Milton geared slitting shears—new—capacity 3/16 iron and lighter. Length of cutting blades 10 in. Dealer representatives wanted.

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ELBOWS AND ANGLES
1" to 40" Dia.

90° TEES
1" to 20" Dia.

45° BRANCHES
2" to 48"
2" to 24" on

30° BRANCHES
2" to 24" on
2" to 48"

Write for pattern Circular and prices covering all my full size blue print patterns.

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507 Grand Avenue — **New Haven 3, Conn.**

IMMEDIATE DELIVERY FROM STOCK

NEW NO. 6-C FAMCO 15-TON COMB. COMPOUND TYPE ARBOR PRESSES;
Floor type, Adj. table. List price.....$324.00
SPECIAL PRICE, f.o.b. Chgo.....$195.00 each

NEW NO 1-B EDLUND 14" B.B. HIGH SPEED DRILLS; 12¾x13" oil gr. Table; No. 1 M.T.; M.D.;
SPECIAL PRICE, f.o.b. Chicago....$250.00 each

NEW 7½ HP U.S. & STDRD. DOUBLE END PEDESTAL TYPE DISC GRINDERS;
18" disc; 1 univ. & 1 plain table. List price $834.00
SPECIAL PRICE, f.o.b. Chgo.....$595.00 each

NEW CINC. COMB. BUFFERS & GRINDERS; one end takes a 1¼x10" grinding wheel, other end has a 12" ext. arm to take buffing wheels; 1 HP, 3/60/220, 1750 RPM. List price.....$209.00
SPECIAL PRICE, f.o.b. Chgo.....$195.00 each

NEW 3 HP. CLARK DOUBLE END PEDESTAL TYPE WET & DRY GRINDERS;
12x2x1¼" wheel; 3/60/220. List price....$450.00
SPECIAL PRICE, f.o.b. Chgo.....$295.00 each

NEW 72" x 16 gauge LOWN POWER SLIP ROLLS; with 2 HP 3/60/220 motors.....$850.00

NEW 36"x3" PEXTO & NIA. HAND POWER SLIP ROLLS, mounted on stand. Our special price.....$260.00. List price.....$314.00

Send for free copy of our "Machinery Mart"

INTERSTATE *Machinery Co., Inc.*
1433 W. PERSHING RD., CHICAGO 9, ILL.

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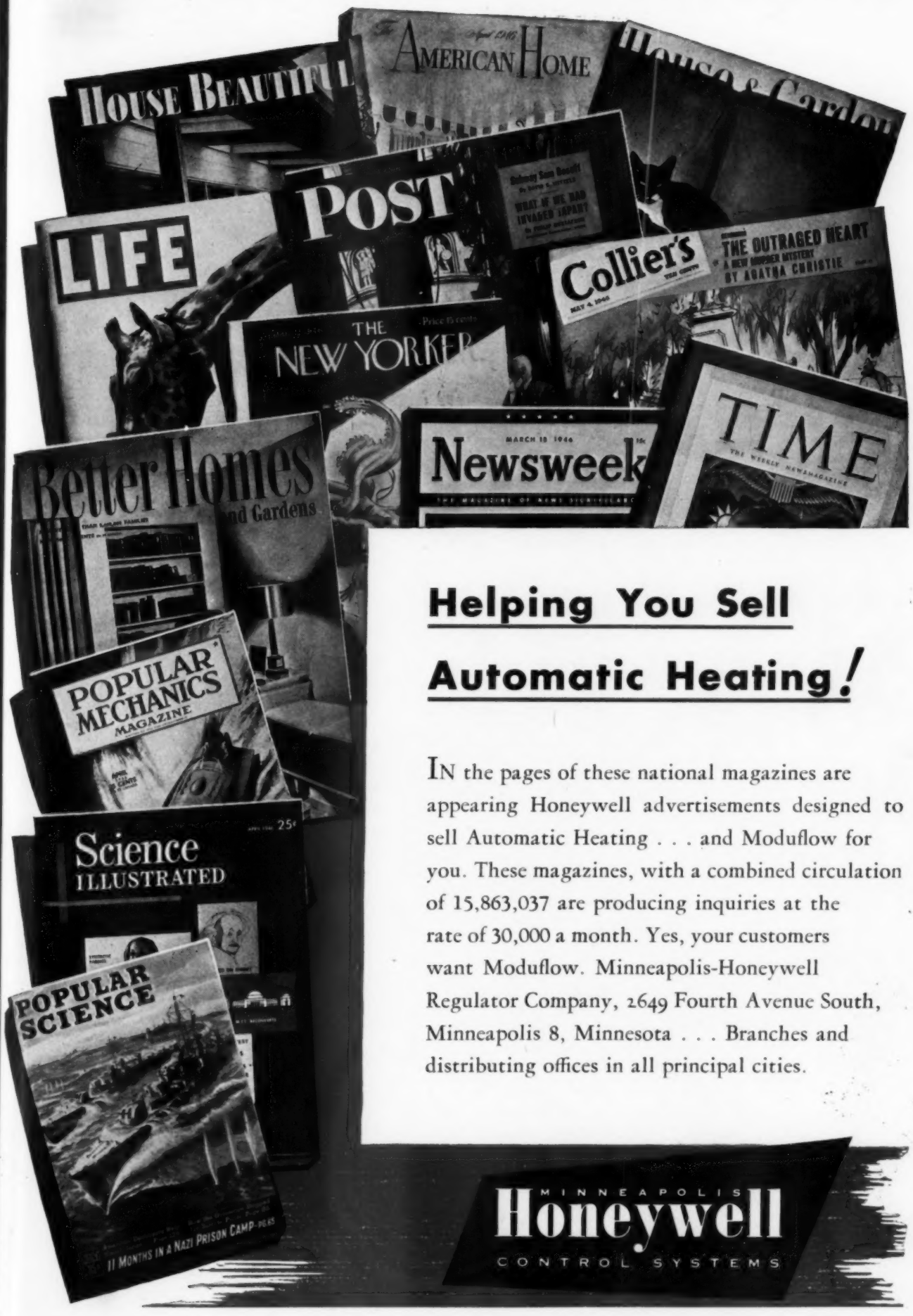
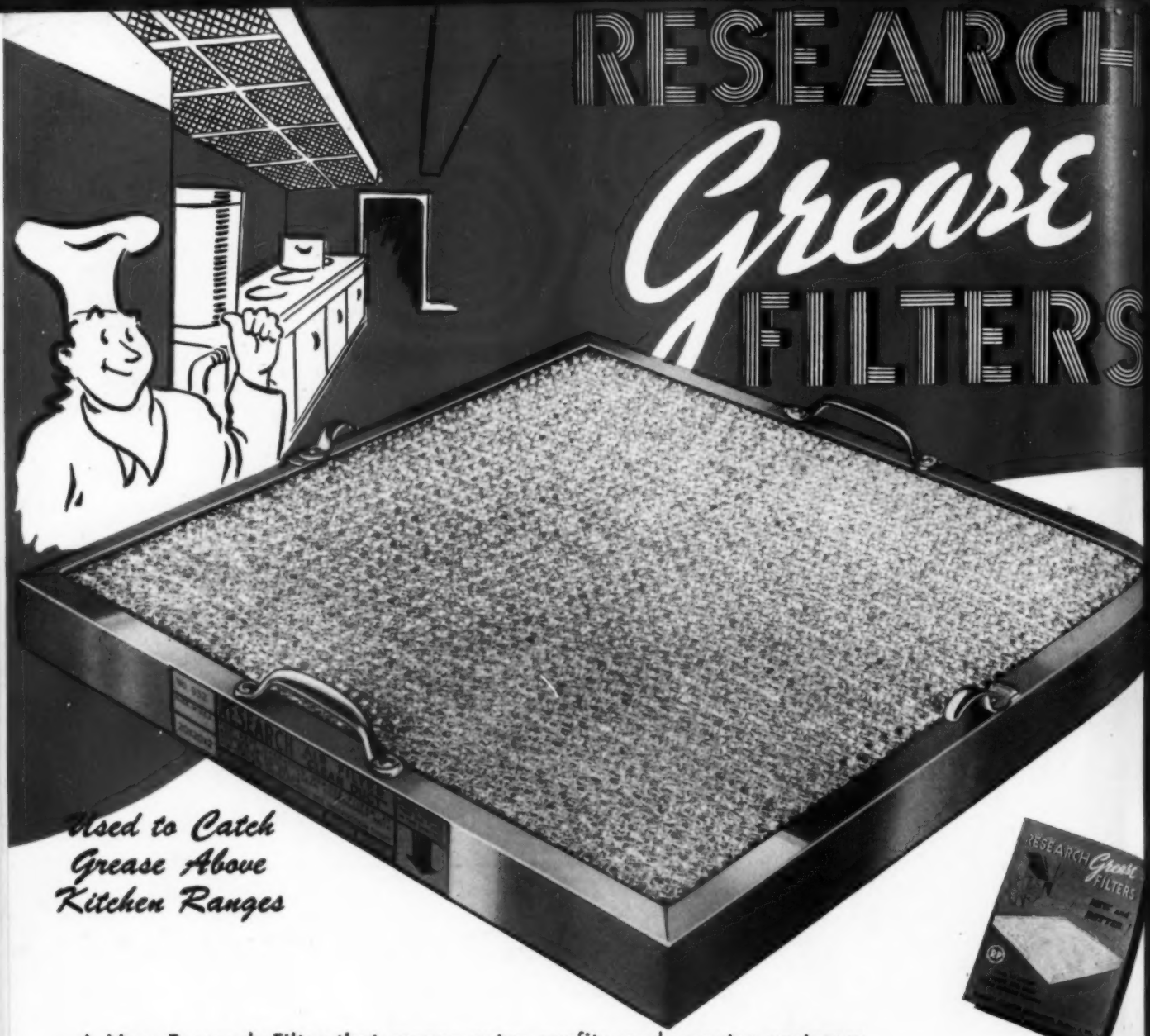


Helping You Sell Automatic Heating!

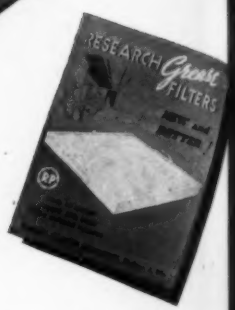
IN the pages of these national magazines are appearing Honeywell advertisements designed to sell Automatic Heating . . . and Moduflow for you. These magazines, with a combined circulation of 15,863,037 are producing inquiries at the rate of 30,000 a month. Yes, your customers want Moduflow. Minneapolis-Honeywell Regulator Company, 2649 Fourth Avenue South, Minneapolis 8, Minnesota . . . Branches and distributing offices in all principal cities.

MINNEAPOLIS
Honeywell
CONTROL SYSTEMS

RESEARCH Grease FILTERS



Used to Catch Grease Above Kitchen Ranges



A New Research Filter that means extra profits and greater customer satisfaction for you. Specially engineered of a split and expanded Alumaloy foil . . . 98% efficient against greasy kitchen vapors. Offers outstanding advantages to restaurants, clubs, hotels, galleys and other places that may require a washable style filter.

Write today for free new t
nical Data Sheet that expl
the method of installation, g
sizes, how to order and o
important information.

ELIMINATES FIRE HAZARDS

Kitchen exhaust systems provide a dangerous fire hazard. Research Grease Filters will catch and hold 98% of the highly inflammable vapors that otherwise collect in flues and ducts.

CUTS DOWN EXPENSE

Dirty kitchen exhaust flues are costly to clean and a recognized fire hazard to insurance underwriters. Research Grease Filters often save more than installation cost in less than a year.

PROVIDES BETTER SANITATION

Research Grease Filters will hold "floating" grease that drips and otherwise causes an unsanitary condition. Really important over deep fryers.

GIVES MOTOR PROTECTION

Collecting grease causes fans to slow down — "drag". Costly repair bills are created when brushes and commutators gum up and lose proper contact. Research Grease Filters are washable in hot soapy water.

RESEARCH PRODUCTS CORPORATION

MADISON 3, WISCONSIN